City and County of the City of Chester.

ANNUAL REPORT

TO

THE MAYOR, ALDERMEN, AND COUNCILLORS OF THE
CITY AND COUNTY OF THE CITY OF CHESTER

ON THE

HEALTH OF THE CITY

IN

1910.

BY

J. R. CURRIE,

M.A., *Oxon. and Edin.*, M.D., *Glas.*

MEDICAL OFFICER OF HEALTH.

CHESTER:
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1911.

The Health of Chester during the year 1910 forms the subject of this Report.

The Death Rate of the City for 1910 was the lowest yet recorded.

The Phthisis Death Rate also was the lowest observed up to the present time.

Three cases only of Enteric Fever occurred during the year. This likewise constitutes a record.

The above returns offer ground for satisfaction.

It is on the other hand matter for regret that there were five notifications of Puerperal Fever, and that the Infantile Mortality Rate was higher than in recent years.

The following advances were made by the City during 1910 along the path of sanitary progress.

Ophthalmia of the New Born was declared a notifiable disease.

Arrangements were made for the provision of Diphtheria Antitoxin free of charge.

An Order was issued for the removal of Stable Refuse at stated hours and intervals.

Measures were set on foot for the Destruction of Rats.

Byelaws for Common Lodging Houses came into operation.

A method was instituted for the control and supervision of Fried Fish Shops.

An Observation Block was opened at the Isolation Hospital.

The requirements noted below call for attention in the near future. They closely affect the welfare of the City.

Amendment of the procedure now current for the removal and disposal of house refuse.

Extension and completion of the Sewage Disposal Works of the Corporation.

Introduction of Building Byelaws, and of Byelaws for the Regulation of Houses let in Lodgings.

Inception of arrangements for dealing in an adequate manner with the problem presented by existing houses unfit for habitation.

Construction by the Chester Water Company, with the least possible delay, of the works authorised by Parliament since the close of the period to which this Report relates.

Town Hall. Chester,
May, 1911.

Public Health Committee.

Chairman - - DR. MANN.

Deputy Chairman - MR. H. DODD.

Members :

ALD. EGERTON GILBERT.
MR. W. CARR.
MR. H. B. DUTTON.
MR. J. GRIFFITHS.
MR. E. O. ROBERTS.
MR. A. WALL.
MR. J. OWENS.
MR. A. S. DUTTON.
MR. A. R. SMITH
DR. PARRY.
MR. J. SHERIFF ROBERTS.
MR. W. WELSBY.
MR. G. J. ROBERTS.

THE MAYOR (ALDERMAN D. L. HEWITT) is an *ex-officio* Member of all the Committees of the Council.

……

Staff of Health Department.

Medical Officer of Health	J. R. CURRIE.
Assistant Medical Officer of Health	W. SCARISBRICK.
Chief Inspector	A. T. EGINTON.
Inspectors	J. BUCKLEY. P. REES.
Lady Inspector	ANNIE TOWNEND, *succeeded by* ETHEL M. COHEN.
Clerks	W. RIGBY, *succeeded by* E. FOULKES. C. TAYLOR.

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STATISTICAL SUMMARY, 1910.

Area in Acres	2,862
Estimated Population	39,711
Birth Rate	24·9
Death Rate	15·1
Infantile Mortality	138
Phthisis Death Rate	1·082
Death Rate from all forms of Tuberculosis	1·737
Respiratory Death Rate excluding Phthisis	2·241
Zymotic Death Rate	1·71

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City and County of the City of Chester.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH

FOR THE YEAR 1910.

POPULATION.

The population of Chester estimated up to the end of June, 1910, was 39,711. This figure takes account of citizens in the Chester Workhouse, which is situated in Hoole beyond the city boundary, the Chester County Asylum, the Middlesbrough Asylum, Yorkshire, the Nottingham Asylum, the Prestwich Asylum, and the Royal Albert Asylum, Lancaster.

BIRTHS.

The registered births for 1910 were 992. This number represents a birth rate for the City of 24·9 per 1000 living.

Comparative figures appear in the following table:—

BIRTH RATES 1910.	PER 1000 LIVING.
England and Wales	24·8
77 Great Towns...	25·0
136 Smaller Towns	23·7
Chester	24·9
Rural Districts	25·0

The Chester birth rate occupies an intermediate position between the Great Towns and Rural Districts on the one hand, and the Smaller Towns and Country generally on the other. The City is fractionally lower than the Great Towns and Rural

Districts, fractionally above the Country as a whole, and higher by 1·2 per 1000 than the 136 Smaller Towns among which it is grouped.

The Birth statistics of the City from 1874 to 1910 are printed below :—

CHESTER BIRTHS 1874—1910,

Year.	Population.	Births.	Birth Rate.
1874	35,905	1,203	33·5
1875	36,121	1,209	33·4
1876	36,337	1,242	34·2
1877	36,553	1,255	34·3
1878	36,769	1,258	34·2
1879	36,985	1,238	33·5
1880	37,202	1,261	33·9
1881	37,418	1,232	32·9
1882	37,443	1,182	31·6
1883	37,468	1,158	30·9
1884	37,493	1,141	30·5
1885	37,518	1,158	30·8
1886	37,543	1,151	30·6
1887	37,568	1,097	29·2
1888	37,593	1,074	28·6
1889	37,618	1,096	29·1
1890	37,643	1,098	29·2
1891	37,668	1,074	28·5
1892	37,784	1,128	29·95
1893	37,901	1,159	30·71
1894	38,017	1,105	29·1
1895	38,134	1,142	30·0
1896	38,251	1,170	30·6
1897	38,367	1,081	28·2
1898	38,484	1,103	28·6
1899	38,600	1,049	27·2
1900	38,717	1,092	28·2
1901	38,834	1,037	26·7
1902	38,951	1,054	27·0
1903	39,075	1,064	27·2
1904	39,199	1,044	26·7
1905	39,250	1,066	26·8
1906	39,325	1,063	27·0
1907	39,420	1,015	25·7
1908	39,515	981	24·8
1909	39,613	983	24·8
1910	39,711	992	24·9

Thus the rate for 1910 is ·1 per 1000 above the lowest, which was reached in 1908 and continued in 1909. The improvement though slight is welcome : but the total births of the city, which fell below 1000 in 1908, are still beneath that figure.

From 33·9 in 1880 to 24·9 in 1910 the decline is 9 per 1000. Calculated on the population in 1910, a fall in the birth rate of 9 per 1000 represents in the year a loss to the City of 354 births.

It appears to be one of the effects of advancing civilization to depress the birth rates of communities in such a manner that the thrifty, the prudent and the circumspect orders of society are diminished first, while the undisciplined and ineffective still remain prolific.

Whether the falling birth rate is destined to rise again or not, it should in the meantime be readjusted. Morally and mentally feeble persons, degenerate and undesirable cumberers of the field of useful activity should be brought under supervision and restraint. Thus the depraved stock will die out, and a new birth rate will be based on the principle that every child born shall be fit in after years to play a proper part in the national life.

The number of illegitimate births was 33, five less than in 1910, two less than in 1909.

Four children were born in canal boats.

There were 12 examples of twin birth.

STILL BIRTHS.

Eighteen still births were reported by Midwives during the year, and were investigated by the Health Department. Twelve of the children were male and 6 female. No example of wilful interference with pregnancy was reported.

Duration of Pregnancy—Of the 18 children 2 were born at 6 months, one at 7 months, and 5 at 8 months. The remainder were at full time.

Previous Labours.—In two instances the still birth was the first. The remaining 16 cases showed a total of 80 previous conceptions which had resulted in the birth of 70 children, 65 at full term and 5 prematurely. There had been 10 miscarriages. Of the 70 children, 42—or 60 per cent.—survived at the date of enquiry.

One mother, with 12 conceptions, had had 12 children, all at full time, of whom 11 survived. Another with 12 conceptions had 5 miscarriages : of her 7 full time children 5 survived at the date of enquiry. Another with 10 conceptions, had 9 full-time births and one miscarriage : 7 of the 9 survived.

Occupation of Father.—Of the 18 fathers 9 were described as labourers, 6 general, and 3 in the leadworks. Three worked with horses: one was a newsvendor : most of the rest were skilled artizans.

Occupation of Mother.—*Before* marriage three of the mothers were factory workers and two dressmakers. Of the rest the majority were in domestic service.

After marriage two mothers continued factory work and one had casual employment. The rest were described as housewives.

Temperance.—Three fathers and one mother were reported as addicted to alcohol. Six fathers and four mothers were believed to be total abstainers.

Causation.—Among the proved causes of still birth are those which relate to the actual course of labour. Among the probable or problematical causes are those which concern the health and surroundings of the expecting mother.

Abnormal presentations of the child in labour are favourable to still birth. In one of the cases the feet presented and in one the breech.

In the latter case the Midwife was absent at the moment of birth, and the facts were minutely investigated. It emerged that the Midwife's position had been one of considerable difficulty, and that she had taken all possible steps to obtain a skilled substitute.

Complications of labour which call for specially dexterous handling are apt to prove untoward, and may render live birth impossible. Prolapse of the umbilical cord or navel string is such a complication. Of this there were two examples.

Physical shocks sustained by the expecting mother may prove disastrous to the child. Two of the mothers during their pregnancy were injured by falls.

Mental or emotional stress is also hurtful. Of this there was one example in the form of intense grief.

Any cause which impairs the nutrition or health of the expecting mother may weigh the balance down. Thus one mother was found to be underfed: another had fallen into intemperance. Certain fathers, as already noted, were intemperate, and one was in casual employment. These conditions are the fore-runners and hand-maids of poverty, which thus come into relation with the occurrence of still birth.

Factory Work.—Two of the mothers worked in factories after marriage. Factory work is hurtful to expecting mothers, though the additional earnings may sometimes suffice to maintain the household above the poverty line. It should never continue to the eve of the onset of labour. An interval of rest should be prescribed by law.

Thus some of the causes of still birth lie deep in the social system; others lie deeper still, in hereditary principles. Both are nearly allied to those influences which lead to infantile deaths in the early weeks and months of separate existence.

The problem, how to deal with these causes, is one of extreme complexity: but in any scheme put forward the care and supervision of expecting mothers in the humbler walks of life must hold an important place.

This good work has been began in Chester by the Ladies' Health Society. Dinners have been given by them during 1910 to a number of expecting mothers.

MIDWIVES.

MIDWIVES ACT, 1902.

Intention to Practice.—Twenty-five Midwives gave notice of intention to practice in Chester in 1910. Nine were engaged in the work of the Ladies' Benevolent Institution. One resided in Flintshire and one in Hoole.

Two of the twenty-five left the district during the year and one obtained the consent of the Central Midwives Board to remove her name from the Roll.

April 1st, 1910.—The year 1910 was an important year in the administration of the Midwives Act. Prior to 1st April, 1910, the practice of Midwifery was open to uncertified Midwives. Even Midwives whose names had been struck off the official roll on account of drunkeness or incapacity were free to continue the work of attendance on women in labour. The 1st day of April, 1910, inaugurated a wholesome change, and it became illegal for any woman to attend women in child birth habitually and for gain, otherwise than under the direction of a qualified medical practitioner, unless she was certified under the Act. Henceforth the legal practice of midwifery, cases of emergency excepted, is restricted to Medical Practitioners and Certified Midwives. This is a beneficent provision for mothers, and a wedge driven into the forces which favour infantile mortality.

Rule B, 2.—On 14th June, 1910, a notice was received from the Central Midwives Board adverting to the terms of their new Rule B, 2, in accordance with which a woman who had failed to claim certification at the proper time, that is to say prior to 1st April, 1903, might still be admitted to the Midwives Roll subject to the approval of the Board. The door thus re-opened for a space was to close on 30th September, 1910. An advertisement was placed in local newspapers drawing public attention to the facilities offered: and as a result two candidates in the Chester area applied for and received certificates.

Medical Assistance.—Midwives sought for medical assistance during the year on 47 occasions, 15 of which emerged in the course of labour, 31 after its completion, and 1 in its absence.

During labour the complications were these:—abortion 1, footling presentation 1, hand presentation 1, impacted breech 1, persistent occipito-posterior presentation 2, prolapse of cord 2, prolonged second stage 4, retained placenta 3.

After labour the following conditions affected the *mother*:—elevation of temperature 5, pain in side 1, post partum hæmorrhage 2, ruptured perineum 4. The following concerned the *child*:—convulsions 1, cyanosis 1, deformity of face 1, debility 7, hydrocephalus 1, inflammation of eyes 3, spina bifida 1, prematurity 2, prematurity of twins 1. There was one example of syphilis affecting both mother and child.

One mother, though not in labour, was found to be in need of medical care.

Two of the children with inflammation of the eyes were afterwards notified as suffering from Ophthalmia Neonatorum.

NOTIFICATION OF OPHTHALMIA NEONATORUM.

At a meeting of Council held on 26th January, 1910, it was resolved that the provisions of the Infectious Disease (Notification) Act, 1889, should apply within the City of Chester to Ophthalmia Neonatorum.

This Order was approved by the Local Government Board by instrument dated 3rd February, 1910. It came into operation on 1st March, 1910.

The disease known as Ophthalmia Neonatorum or Inflammation of the Eyes of the New Born is set up by germs which gain access to the infants' eyes in the act of birth. It is readily prevented by suitable measures, and cured as a rule if taken in time.

Ophthalmia of the new born has not the wide prevalence of the common infectious diseases, and it does not usually threaten life. Nevertheless its results are most disastrous. It is said to cause 10 per cent. of all cases of blindness in this country. According to estimate there are in England and Wales at the present time some 3,000 children under 15 years of age, whose sight has been destroyed by this disease. Apart from the misery and distress which it carries in its train, its occurrence is costly to the community. A child in Chester with the gift of sight can be educated for £50: the education of a blind child costs the City £400.

A measure designed to mitigate the consequences of Ophthalmia Neonatorum is not only humane, but economically sound. The resolution of Council ordering notification was such a measure. Notification brings the infants affected under the supervision of the Health Department at the earliest possible moment: and it compels, with additional force, the attention of Midwives to the Rule of the Central Midwives Board which requires them to call in medical assistance for children with inflamed eyes.

Position of Midwives.—The best course for Midwives to follow with respect to Notification was carefully considered. The decision arrived at will be gathered from the following letter, a copy of which was sent to all Midwives practising in Chester:—

> I have to inform you that on and after 1st March, 1910, the disease known as Ophthalmia Neonatorum, or Inflammation of the Eyes in New Born children, will be a Notifiable Disease in Chester. That is to say, when a case of Ophthalmia Neonatorum occurs in Chester, it will be the duty of certain persons, enumerated below, to send to me at the Health Department, notice of the name and address of the child.
>
> The persons in question are these:—
>
> 1. The head of the family to which the child belongs;
> 2. In his default, the nearest relatives of the child present in the house or building where the child is, or in attendance on the child;
> 3. In default of such relatives, every person in charge of, or in attendance on the child;
> 4. Every medical practitioner attending on or called in to visit the child.
>
> If, therefore, a case of Ophthalmia Neonatorum occurs in your practice as Midwife, unless notice is sent to me by the head of the family, or by the nearest relatives of the child as stated above, the duty of sending notice falls to you as a person in charge of or in attendance on the child.
>
> You will, however, observe that Medical Men also are under an obligation to notify, and further, you will recall that in all cases of inflammation of the eyes of the child, however slight, you are required by Rules E 18 and 19 (5) of the Central Midwives Board to request the husband or nearest relative or friend to obtain medical help, and that

you are also required by Rules E 20 and 21 of the Board to send notice to me at the Health Department that you have advised that course. If these Rules are correctly followed by you, any case of Ophthalmia Neonatorum which may occur in your practice as Midwife, will have been under the care of a medical man from its earliest stages, and will in consequence be notified by him.

If, therefore, you carefully carry out the directions of the Central Midwives Board, if you duly send for medical help, and duly give notice thereof to me at the Health Department, and if in addition you are informed by the medical man whom you have called in that he has notified the child as a case of Ophthalmia Neonatorum, you yourself will not be required to send a further notification.

Otherwise, as already stated, the duty of giving a notice is laid upon you, as a person in charge of, or in attendance on the child, subject to the conditions above detailed in that connection. Every person required to give a notice who fails to give the same is liable on summary conviction to a fine not exceeding forty shillings.

J. R. CURRIE,
18th February, 1910. Medical Officer of Health.

Number of Cases.—Between 1st March, 1910, when the new order came into effect, and the end of the year, four infants were notified to the Health Department as suffering from Ophthalmia Neonatorum.

Three of the cases occurred in the practice of Midwives who sent for medical help in due course, and who, according to enquiries made, had carried out the instructions of the Central Midwives Board as to dealing with the eyes of infants at birth.

One case was in connection with the practice of a Midwife, but after she had ceased attendance. A careful inquiry appeared to elicit that up to that time the child's eyes had presented normal characters.

The treatment of two infants was supervised by the Council's Lady Health Visitor; two did not require this attention.

Three of the infants made a complete recovery without any discernible damage to the eyes. One died of intercurrent illness and prematurity at the age of 11 days, while affected with Ophthalmia.

Over that portion of the year during which Ophthalmia was notifiable the result may be looked on as in the main satisfactory. One child died: that is matter for regret: but not one was left blind.

DISCIPLINARY MATTERS.

Several Midwives in the course of the year were guilty of non-compliance with the rules of the Central Midwives Board. Each case was carefully investigated, and dealt with in a suitable manner.

A Midwife visiting one of her patients on the third day after the birth of the child found her to be suffering from pain in the abdomen. She sent for medical help, but not in writing, and she did not inform the Medical Officer of Health that she had done so. This Midwife was reprimanded.

A Midwife delivered a woman and attended her thereafter for five days. At the end of that time she believed her patient to be in a good state ; but a Medical man, called by the woman's friends, found the temperature to be 105°. Four days later the woman died of Puerperal Fever. It was ascertained by inquiry that the Midwife had not taken her patient's temperature in a proper manner, and so had failed to recognise her grave condition. The facts were reported to the Central Midwives Board. The Midwife asked leave of the Board to remove her name voluntarily from the Midwives' Roll, and the Board permitted her to do so.

A Midwife who called in a Medical man to one of her patients was informed by him that the case was infectious. Nevertheless she visited two other women, believed to be entering into labour, without having disinfected her person and belongings to the ascertained satisfaction of the Local Authority. One of the women visited took Puerperal Fever. The facts were closely inquired into, considered by the Public Health Committee, and reported to the Central Midwives Board, but after correspondence with the Board it was decided by the Committee that the Midwife, although she had not acted in the best interests of her patients, had not transgressed the existing rules of the Board.

The Board's rules with regard to infection are at present too lenient. Midwives who have reason to suspect that they have run the risk of infection should be compelled to report the facts to the Local Supervising Authority, and on failing so to report should be liable to penalty or removal from the Roll.

PUERPERAL FEVER.

The returns of Puerperal Fever in 1910 blacken the fair record of last year.

Five cases of this disease were notified in Chester in 1910. Four of these occurred in Midwives' practice, and three of the four in connection with the practice of one Midwife. A minute inquiry was made regarding the three, as referred to under the section entitled Disciplinary Matters. The fourth case, which proved fatal, is noted under the same section; the Midwife in charge was allowed to remove her name from the Roll.

On rare occasions Puerperal Fever may arise spontaneously, but as a rule it is due to one or other of the following causes:—ignorance, indifference, want of cleanliness. No precaution that a Midwife can take to prevent it is too extreme. Too often it ends in death, and even when it is not fatal it may lead to permanently crippled health.

INQUESTS.

The number of inquests held in 1910 was 45, precisely the same as in the previous year. Thirty-three related to persons over 5, and 12 to children under that age.

The details follow:—

Adults and Children over Five—

Suicide	7
Drowning, accidental	5
Fracture of Skull by falling	3
Heart Disease	3
Falling, accidental	2
Run over by Motor Car	2
Burns	2
Run over on Railway, Apoplexy, Injuries received, Acute Peritonitis, Pneumonia, Syncope, Kick of horse, Run over by lorry, and Suffocation, each one	9
	33

Children under Five—

Convulsions	5
Overlaying	3
Premature Birth, Scalds, Spasm of Glottis, Cerebral Abscess, each one	4
	12

One of the most significant items in the above return is the occurrence of 3 deaths from overlaying. Overlaying is an absolutely preventible cause of death, and ought to be absolutely prevented. Infants should sleep in their own cradles. Any box or basket of a suitable size will serve. And parents who overlay their children while under the influence of drink should be prosecuted without fail under Section 13 of the Children Act, 1908.

NON-RESIDENT DEATHS.

The number of non-residents who died in the City during the year was 47. Most of these occurred in the Chester General Infirmary, whose sphere of usefulness extends beyond the City boundary.

These deaths in the Registrar's returns were allocated as follows :—

Hoole	5
Chester Rural District, Ellesmere Port, each 4 ...	8
Connah's Quay, Great Barrow, each 3	6
Buckley, Ewloe, Hawarden, Helsby, Mickle Trafford, Tarporley, each 2	12
Crewe, Flint, Hapsford, Hatherton, Holyhead, Kelsall, Liverpool, Mold Junction, Newbold, Newton, Nottingham, Ruabon, Stoke-on-Trent, Tipton, Wavertree, Wolverhampton, each one	16
	47

DEATHS.

Deaths of Citizens during 1910 were 601 in number. Seventy-one of these were registered as having occurred in the Chester Workhouse, which is situated outside the City Boundary. Inquiry was made at other Institutions which have appeared in these returns in previous years. It was reported that no deaths of Chester residents had taken place in them.

The death rate of the City for 1910 is 15·1 per 1,000 living, the lowest yet recorded.

It is necessary to bear in mind that the population on which this rate is based is the estimated, not the actual, population of the City in 1910, that 9 years have passed since the census of 1901, and that the longer the lapse of time since the last census the greater the liability of the estimated population to error. If the discrepancy should happen to be on the side of excess the death rate for 1910, and other rates in this Report founded on estimated population, will be too low. The error will be as suggested if the growth of the City since 1901 has been less than between 1891 and 1901. The census of 1911 will make all plain.

The following table exhibits the Chester death rate, in comparison with the rates for England and Wales as a whole, the great towns, small towns and rural districts. Judged by these standards in years past, the Chester rate has been relatively high, and 1910 forms no exception to this rule.

Death Rates 1910.	Per 1,000 living.
England and Wales	13·4
77 Great Towns	14·3
136 Smaller Towns	12·4
Chester	15·1
Rural Districts	13·6

The corrected death rate for Chester, which has regard to the relative numbers of males and females and of persons at different ages, is 15·6.

There has been a decline in the death rate of the City from 25 per thousand in the early seventies to the record figure of 1910. The previous record had been in 1908; then the rate was 16·02 per thousand. Next in order came the rates for 1894, 1904, and 1909, which were all below 16·5 per thousand.

The death rate of Chester is still too high, but the continuing low rate of the last few years is matter for satisfaction.

Causes of Death.—In 1910, as compared with 1909, there was a marked rise in the number of deaths from Measles, which prevailed during 1910. There was an appreciable increase in the mortality from Diarrhœa and Marasmus, and a slight increase from Whooping Cough, Tuberculosis other than Phthisis, and Accidents.

There was a marked decline in the deaths ascribed to Scarlet Fever, which had been epidemic in 1909, but had spent its force bv the close of that year. Deaths from Diphtheria, Influenza, Pneumonia, and Convulsions were considerably reduced in number ; while deaths from Enteric Fever, Phthisis, Cancer, Bronchitis, Alcoholism, Premature Birth, Heart Disease and Bright's Disease also showed diminution.

There was one death from Puerperal Fever in 1910, and five from suicide, as contrasted with a blank return under each of these heads in 1909.

Uncertified Deaths—Two uncertified deaths fall to be recorded in 1910. In each case the deceased was advanced in years. The Coroner, from information received, was satisfied that death was due to natural causes, and that an inquest was not required.

ZYMOTIC DEATH RATE.

The zymotic death rate is a somewhat fluctuating figure, and no sure guide to the sanitary status of a community.

The diseases classed as zymotic in this Country are Small Pox, Measles, Scarlet Fever, Diphtheria, Whooping Cough, Typhoid and Typhus Fever, and Diarrhœa.

The deaths from these diseases in Chester in 1910 were 68, as against 48 in the previous year. This is equivalent to a zymotic death rate of 1·71 per 1,000. The relations of this figure to the general rates for the country appear in the following table :—

Zymotic Death Rate 1910.

England and Wales	0·99
77 Great Towns	1·23
136 Smaller Towns	0·88
Chester	1·71
Rural Districts	0·74

The following statement shows the course of the zymotic death rate, in Chester, during recent years :—

ZYMOTIC DEATH RATE, CHESTER, 1905-1910.

1905	2·70
1906	2·72
1907	2·08
1908	1·59
1909	1·21
1910	1·71

The Chester rate for 1910 is high in comparison both with recent years in Chester and with the general rates for the country during the present year. This bad eminence is chiefly due to the prevalence of Measles, which led to 26 deaths in 1910 as opposed to two in the previous year.

METEOROLOGY.

The instruments by means of which Meteorological Observations are made at Chester are these :—

Fortin's Barometer
Maximum Thermometer
Minimum Thermometer
Dry and Wet Bulb Thermometers
Sunshine Recorder
Rain Gauge
Four Earth Thermometers—1ft., 2ft., 3ft., and 4ft.

Barometric Pressure—The average mean barometric reading for 1910 was 29·838 inches. The highest monthly mean pressure was 30·235 inches in September ; the lowest 29·509 in February.

The average monthly range was 1·188 inches.

The highest recorded reading during the year was 30·599 inches on 31st March; the lowest 28·536 inches on 7th November.

Temperature—Temperatures are recorded as degrees Fahrenheit in the shade.

The highest temperature observed during 1910 was 78·5° on 8th June and 14th July ; the lowest was 16·9° on 27th January.

The mean temperature during the year was 49·0°. The average for the maximum thermometer was 55·6°; for the minimum 42·4°. The highest monthly mean was 59·5° in August; the lowest 39·3° in November.

The mean daily range of temperature was greatest in May and least in December.

Humidity—The average relative humidity for the whole year was 80·4 per cent. The highest mean relative humidity was 87 per cent. in November and December; the least 73·5 per cent. in July.

Bright Sunshine—The total hours of bright sunshine in 1910 were 1,548. The sunniest month was May with 215 hours; and the next in order was July with 201 hours. The darkest month was December with 36 hours of sunshine, an average of less than 1¼ hours per day.

The sunniest day in the year was the 17th of June, on which the sun shone brightly for 14 hours.

In May and June there were no sunless days; in April and September one each. In the dark December month 12 days were without sun; and in January and November 7 each.

Rainfall—The total rainfall during the year was 27·89 inches. The wettest month was November with 5·38 inches; the next in order was July with 3·19.

The driest month was September with 0·26 inches; and the next in order March with a fall of 0·7 inches.

The number of days with appreciable rain was 204; 25 of these were in February, 23 in December, and 22 in August and November respectively. September, which had the lowest rainfall, had also the fewest wet days.

The wettest day in the whole year was the 5th of July, on which the rainfall was 0·89 inches.

Underground Temperature—The average record for the 1ft. Earth Thermometer was 49·7° ; for the 2ft. 51·1° ; for the 3ft. 52·1° ; and for the 4ft. 52·7°.

Direction of Wind—The prevailing winds throughout the year were westerly ; these were observed on 147 days—23 days S.W. ; 49 days due W. ; and 75 days N.W.

Of the 94 easterly winds, 67 were from the S.E. The wind blew from due East on 12 days only: and North East on 15.

There were 40 calm days during the year. The quietest month was September during which there were 10 days windless. In February and April there were no calm days.

The Chester Meteorological Station is situated on Sealand, at the Corporation Sewage Works. The ground level at the site is 33 feet above ordnance datum.

Observations are made daily at 9 a.m. Chester time, that is to say 9 hours 12 minutes Greenwich time, by Mr. W. D. Scouller, B.Sc., Sewage Works Superintendent. Mr. Scouller has also prepared the following tables :—

BAROMETRIC PRESSURE.

CHESTER, 1910.

Month.	Mean Pressure, reduced to 32° F. and mean sea-level Inches.	Observed Monthly Range. Inches.	Extremes.
January ...	29·771	1·909	
February ...	29·509	1·404	
March ..	30·125	·963	Highest :
April ...	29·798	1·558	31st March,
May ...	29·875	1·069	30·599
June ...	29·862	·902	
July ...	29·841	·836	
August ...	29·809	·742	Lowest :
September...	30·235	·712	7th November,
October ...	30·032	·900	28·536
November ...	29·588	1·644	
December ...	29·605	1·632	
Averages ...	29·838	1·188	

TEMPERATURE IN THE SHADE.

CHESTER, 1910.

Month.	Maximum Degrees F.	Minimum Degrees F.	Mean Degrees F.	Mean daily range of temp'ture Degrees F.	Extremes. Highest Degrees F.	Extremes. Lowest Degrees F.
January ...	45·6	33·5	39·6	12·1	57·4	16·9
February ...	48·4	36·4	42·4	12·0	57·3	30·1
March ...	50·0	36·8	43·4	13·2	55·8	29·7
April ...	52·5	38·5	45·5	14·0	64·9	23·6
May ...	59·8	43·2	51·5	16·6	74·0	28·4
June ...	66·2	50·7	58·5	15·5	78·5	45·5
July ...	65·3	50·7	58·0	14·6	78·5	43·6
August ...	66·3	52·6	59·5	13·7	74·7	44·7
September ...	62·1	47·6	54·9	14·5	70·0	36·2
October ...	57·0	45·0	51·0	12·0	70·1	34·9
November ..	45·2	33·4	39·3	11·8	56·0	19·7
December ...	48·8	39·8	44·3	9·0	55·9	25·7
Averages ...	55·6	42·4	49·0	13·3	...	...

HUMIDITY.

CHESTER, 1910.

Month.	Dry Bulb. Degrees F.	Wet Bulb. Degrees F.	Dew Point. Degrees F.	Relative Humidity. Per Cent.
January ...	38·3	36·5	34·0	85·1
February ...	42·2	39·9	37·0	82·0
March	43·3	40·8	37·8	81·1
April	46·1	43·0	39·5	77·5
May	52·8	49·6	46·4	79·0
June	59·1	54·9	51·1	75·0
July	58·9	54·4	50·4	73·5
August ...	60·2	56·4	53·1	77·0
September ...	55·8	52·5	49·4	79·5
October ...	51·7	49·0	46·3	81·5
November ...	38·4	37·0	35·1	87·0
December ...	44·3	42·7	40·8	87·0
Averages ...	49·3	46·4	43·4	80·4

BRIGHT SUNSHINE.

CHESTER, 1910.

Month.	Total Bright Sunshine. Hours.	Most Sunshine in one day.		Number of Sunless Days.
		Amount Hours.	Date.	
January ...	85·45	6·20	25th	7
February ...	86·55	7·80	27th	2
March	136·30	10·60	29th	2
April	124·50	10·30	26th	1
May	215·20	13·70	25th	0
June	198·60	14·30	17th	0
July	201·15	13·40	13th	2
August ...	151·65	12·55	10th	2
September ...	149·30	10·35	27th	1
October ...	91·30	9·60	1st	5
November ...	72·00	6·30	1st	7
December ...	36·85	4·80	18th	12
Total ...	1548·85	—	—	41

RAINFALL.

CHESTER, 1910.

Month.	Total. Inches.	Number of days with rain (·01″ or more).	Greatest Fall in one day.	
			Amount. Inches.	Date.
January ...	1·63	17	0·25	23rd
February ...	1·92	25	0·34	20th
March	0·70	10	0·24	17th
April	2·39	20	0·50	28th
May	1·81	19	0·37	15th
June	2·19	15	0·47	22nd
July	3·19	12	0·89	5th
August ...	2·59	22	0·48	28th
September ...	0·26	7	0·09	10th
October ...	2·72	12	0·81	11th
November ...	5·38	22	0·86	1st
December ...	3·11	23	0·43	1st
Total ...	27·89	204	—	—

UNDERGROUND TEMPERATURE.

Chester, 1910.

Month.	1 Foot. Degrees F.	2 Feet. Degrees F.	3 Feet. Degrees F.	4 Feet. Degrees F.
January	38·8	41·8	44·6	45·8
February	39·4	41·4	43·5	44·5
March	42·4	43·7	44·5	45·3
April...	46·0	47·1	47·3	48·0
May	52·6	52·3	51·3	51·5
June	61·5	60·3	58·1	57·8
July	60·7	60·8	60·2	60·3
August	61·2	61·7	61·3	61·4
September	57·3	58·8	59·9	60·4
October	53·1	55·6	57·7	58·4
November	40·7	45·5	50·1	51·7
December	42·3	44·0	46·1	47·2
Averages	49·7	51·1	52·1	52·7

DIRECTION OF WIND.

Chester, 1910.

Month.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.
January	2	1	0	7	6	7	3	4	1
February	3	1	1	3	9	4	4	3	0
March	4	0	0	5	6	3	6	5	2
April	3	2	0	6	3	1	7	8	0
May	6	3	3	3	0	0	3	10	3
June	0	2	1	8	3	2	2	9	3
July	2	0	2	11	0	0	5	8	3
August	0	0	0	5	7	4	7	4	4
September ...	4	3	0	2	2	0	2	7	10
October	4	2	4	7	3	0	2	4	5
November ...	4	0	0	4	4	1	3	6	8
December ...	1	1	1	6	8	1	5	7	1
Total... ...	33	15	12	67	51	23	49	75	40

INFECTIOUS DISEASE.

SCARLET FEVER.

The Annual Report for 1909 contained an account of an epidemic of Scarlet Fever, the most extensive on record since 1886, when notification came into force in Chester. By the close of 1909 the crest of the wave had passed and the stage of decline had set in.

During 1910 the downward movement continued, and reached a low ebb in Autumn.

Details regarding 1910 and previous years appear in the following table :—

SCARLET FEVER, CHESTER, 1886-1910.

Year.	Number of Cases.	Deaths.	Case mortality per cent.	Death rate per 1,000 living.
1886	49	7	14·2	0·186
1887	162	5	3·0	0·133
1888	149	4	2·7	0·106
1889	155	19	12·2	0·505
1890	46	0	0·0	0·000
1891	56	5	8·9	0·133
1892	133	5	3·7	0·132
1893	220	8	3·6	0·210
1894	256	7	2·7	0·184
1895	208	13	6·2	0·341
1896	159	9	5·6	0·235
1897	128	5	3·9	0·130
1898	126	6	4·7	0·156
1899	195	5	2·6	0·129
1900	71	1	1·4	0·026
1901	119	2	1·7	0·051
1902	83	2	2·4	0·051
1903	75	3	4·0	0·076
1904	64	7	10 9	0·178
1905	111	3	2·7	0·076
1906	102	0	0·0	0·000
1907	80	1	1·2	0·025
1908	163	6	3 68	0·151
1909	893	14	1·5	0·353
1910	186	7	3·7	0·170

The total number of cases notified in 1910 was 186, less than one-fourth of the total for 1909, though still comparatively a high return. But precisely one-half of these cases occurred in the first three months of the year. They mark the expiring flicker of the epidemic.

The deaths in 1910 amounted to 7, less than in the previous year, but the proportion of deaths to cases was greater. The case mortality per cent. was 3·7, as contrasted with 1·5 in 1909, when the disease, though widely spread, was mild in character.

The death rate for Scarlet Fever in 1910 was 0·176 per 1,000 living.

The course of the disease throughout the year, in pleasing contrast with 1909, is apparent from the following table :—

SCARLET FEVER, CHESTER, 1909—1910.

Number of Cases.

	1909.		1910.
January	54	...	31
February	30	...	32
March	27	...	30
April	49	...	22
May	90	...	14
June	67	...	6
July	57	...	8
August	49	...	12
September	111	...	9
October	174	...	5
November	107	...	5
December	78	...	12

The number of cases in Public Elementary Schools was relatively less in 1910 than in the epidemic year. Of 893 cases in 1909, 560, or over 60 per cent. were school children ; of 186 cases in 1910, 90, or less than 50 per cent. attended the public schools. While the fever was at its height, the schools played some part in spreading it ; missed cases were frequently present in class, and children of susceptible ages were thus brought within reach of infection. In the stage of decline, however, the influence of the schools was less evident ; and the disease continued to make headway for a time among the general population.

No schools were closed during 1910 in order to prevent the spread of Scarlet Fever.

SMALL POX.

A Small Pox contact arrived in the City in April, and was kept under notice for a suitable period. He had come from the East in a ship which put off three cases of Small Pox at Suez.

In July a patient who presented suspicious signs was sent into the Small Pox Hospital. He proved, after observation, to be suffering from another disease.

CHOLERA.

A Cholera contact reached Chester in July from St. Petersburg by way of Greenwich. He was kept under observation, and did not develop the disease.

PLAGUE.

References are made to this disease under the section entitled Destruction of Rats. Neither cases nor contacts appeared in the City during the year.

DIPHTHERIA.

Sixty-two persons were notified as suffering from Diphtheria. This is a smaller number than in 1909, and the lowest since 1905. Twenty of the cases occurred among children attending public elementary schools ; and 33 among persons not in school attendance.

The disease was most prevalent in April, when 8 of the cases were notified. November presented a single case. The number of notifications in the remaining months ranged from 3 to 7. Diphtheria continued throughout the year, persistent but not extensive.

Of the 62 cases, 3 died, less by 4 than in 1909, and the lowest return since 1903.

The proportion of deaths to cases notified was 4·8 per cent. This is the lowest case mortality recorded for the City. In previous years the figure had been higher. In 1890, for example, 64 per cent. of cases proved fatal.

The rates for recent years are as follows :—

DIPHTHERIA, CHESTER, 1900—1910.

Year.	Number of Cases.	Deaths.	Case mortality per cent.	Death-rate per 1,000 living
1900	45	5	11·1	·129
1901	59	8	13·5	·206
1902	41	3	7·3	·077
1903	29	2	6·9	·051
1904	58	9	15·5	·230
1905	50	5	10·0	·127
1906	152	20	13·1	·508
1907	201	18	8·9	·456
1908	96	7	7·29	·177
1909	74	7	9·4	·176
1910	62	3	4·8	·075

PROVISION OF DIPHTHERIA ANTITOXIN.

The Diphtheria Antitoxin (Outside London) Order 1910 was given under Seal by the Local Government Board on 15th August, 1910. This Order sanctioned the issue by the Council free of charge for the poorer inhabitants of the City of Diphtheria Antitoxin as a medicine within the meaning of Section 133 of the Public Health Act, 1875.

In a covering letter the Board drew attention to the importance of the whole question, and suggested that the Council should consider, at an early date, the arrangements which should be made.

A scheme for the distribution of Antitoxin was approved and confirmed by the Council, and came into operation on 1st December, 1910. It was brought to the knowledge of all Medical Men practicing in the City by means of the following circular letter, which indicates the general scope of the methods adopted :—

DIPHTHERIA ANTITOXIN.

> I am instructed by the Council of the City of Chester to call attention to arrangements made by them, pursuant to the Diphtheria Antitoxin (Outside London) Order 1910, for the provision of Diphtheria Antitoxin free of charge for the treatment of certain inhabitants of the City.

The inhabitants in question are these :—

Persons residing within the City of Chester, including patients of the Chester General Infirmary, who are unable to pay for Diphtheria Antitoxin, but are not in receipt of Parish Relief.

The following are all excluded from the provision :—

(a) Persons residing outside the City of Chester ;
(b) Persons in a position to pay for Antitoxin ;
(c) Poor Law Cases.

The Council have confidence in Medical Men to determine what persons may appropriately be regarded as unable to pay for Antitoxin ; but in the event of any question being raised as to the eligibility of a person treated, they reserve the right of inquiry.

In issuing Antitoxin free of charge it is the desire of the Council to facilitate its prompt administration. It is not proposed to depart in any way from the practice of removing Diphtheria patients to Hospital.

The Council will look to the Medical Man in attendance to administer the Antitoxin. For the treatment of Poor Law cases they will be prepared to issue Antitoxin to Poor Law Medical Officers at cost price.

The method of distributing Antitoxin will be as follows :—

Antitoxin will be issued to messengers presenting written requests signed by Medical Men, and by Medical Men only.

Between 9-30 a.m. and 6 p.m. on Mondays to Saturdays inclusive, public holidays excepted, requests should be presented at the Town Hall, Health Department. On the same days at other hours and on Sundays and public holidays at any hour, requests should be handed, till further notice, to Mr. John Simon, The Cross, Chester.

Antitoxin Syringes will not be issued.

All requests should be endorsed ANTITOXIN and should specify the number of units desired.

In acknowledging receipt of Antitoxin Medical Men will be requested to state, on a form to be provided, the name and address of the person treated, and other details.

The issue of Antitoxin will begin on 1st December, 1910.

J. R. CURRIE,
Medical Officer of Health.

TOWN HALL, CHESTER,
Health Department,
30th November, 1910.

No request for Antitoxin was presented in December, 1910.

ENTERIC FEVER.

Three persons were notified as suffering from Enteric Fever during the year, and proved to be genuine cases.

In two of the cases the source of infection remained obscure: in the third it was clearly demonstrated that the disease had been contracted outside the City.

Two of the cases were unfortunately of a virulent type, and proved fatal.

The Enteric return of last year, 8 notifications and 7 genuine cases, was at that date the lowest on record. In the year now under discussion the record is once more broken: the 3 cases of 1910 mark the lowest known prevalence of this disease in the City.

The decrease of Enteric Fever in Chester has been progressive, as is shown by the following table:—

ENTERIC FEVER, CHESTER. 1876-1910.

1 Year.	2 Population Estimated.	3 General Death Rate per 1000.	4 Enteric Cases Notified.	5 Deaths.	6 Enteric Death Rate per 1000 Population.
1876	36,337	25·03	—	18	·495
1877	36,553	22·72	...	15	·409
1878	36,769	21·3	...	12	·326
1879	36,985	24·95	...	4	·108
1880	37,202	21·17	...	9	·241
1881	37,418	18·85	...	8	·213
1882	37,443	20 17	...	11	·294
1883	37,468	18·90	...	14	·374
1884	37,493	20·83	...	18	·480
1885	37,518	21·63	...	9	·240
1886	37,543	19·47	...	4	·106
1887	37,568	18·83	...	13	·346
1888	37,593	19·90	195	30	·797
1889	37,618	20·30	73	11	·292
1890	37,643	21·78	46	4	·106
1891	37,668	20·8	78	9	·239
1892	37·784	20·9	71	14	·371
1893	37,901	21·4	85	22	·580
1894	38,017	16·229	71	6	·157
1895	38,134	21·25	56	7	·183
1896	38,251	20·4	33	4	·104
1897	38,367	19·2	48	6	·156
1898	38,484	21·3	64	6	·156
1899	38,600	19·84	56	11	·284
1900	38,717	18·8	68	5	·129
1901	38,834	19·43	36	6	·154
1902	38,951	16·53	20	3	·077
1903	39,075	16·84	28	5	·128
1904	39,199	16·228	17	1	·025
1905	39,250	17·9	18	2	·050
1906	39,300	17·9	11	0	·000
1907	39,420	16·5	9	1	·025
1908	39,515	16·02	20	2	·050
1909	39,613	16·28	8	3	·075
1910	39,711	15·1	3	2	·050

The contrast is obvious between the high notifications of 1888 and the figures of recent years.

In his Annual Report for 1888 Dr. Kenyon, at that time Medical Officer of Health for the City, attributed the prevalence of Enteric Fever to surface conditions which the sanitary authority were busily engaged in modifying.

Reporting in 1890 to the Local Government Board, Dr. Ballard drew special attention to sewage conditions and midden privies in Chester as closely related to the frequency of Enteric Fever.

These were the surface conditions referred to by Dr. Kenyon, and the process of modification, already under way in 1888, has been steadily continued since. In 1910 in Chester north of the River the water carriage system is general excepting for a few buildings in deep recesses below sewer levels. South of the River, Saltney alone preserves the privy system down to the present time ; but the East Saltney Sewerage Scheme, which is just completed, will extend to Saltney also the advantages of privy conversion.

The transformation of Saltney will be the crown of that important sanitary undertaking to which the City had set itself when Dr. Kenyon wrote. That undertaking needs no defence. In the fourth column of the above table its beneficent results are plain.

MEASLES.

Measles attained mildly epidemic proportions in Chester during 1910. In 1909 there were two deaths from this disease, in 1910, 26. Of the 26 fatal cases 23 were between one and five years of age, one was under one, and two were over five.

Measles is not a notifiable disease in the City ; but the watchfulness of teachers in elementary schools brought many cases under the notice of the Health Department which would otherwise have escaped observation.

The first recorded case among school children occurred during the week ending 2nd April at Christ Church Infants' Department. The sick children numbered four, and in the following week there were 19 cases at this school. During the week ending 16th April the malady appeared at Sealand Road and St. Werburgh's Infant Departments. The next week it broke out among the Boughton Council infants. By the close of the week ending 7th May it had reached its maximum intensity. It visited every infant department in the City with two exceptions, and early in July, with the onset of the school holidays, it ceased to prevail.

The manner of its rise and fall may be gathered from the following table :—

MEASLES, CHESTER, 1910.

Week ending.	No. of Cases recorded.
April 2	4
" 9	19
" 16	12
" 23	45
" 30	19
May 7	62
" 14	23
" 21	18
" 28	36
June 4	10
" 11	32
" 18	14
" 25	22
July 2	0
" 9	9
" 16	0

During the prevalence of the sickness in the City five infant departments in all were closed for varying periods.

There is at present no sure way of preventing epidemics of Measles. By various methods they may be delayed for a time; but in the end they sweep every barrier before them.

Nevertheless steps may be taken to reduce the mortality from Measles, despite the difficulty of controlling its prevalence.

Mothers and persons in charge of children should cease to regard the disease as a trivial ailment, scarcely worthy of notice, and certainly not sufficiently serious to call for medical treatment. Diphtheria and Scarlet Fever in the popular mind are grave maladies; yet Measles is more deadly to young life than either. It should not be viewed with indifference, but with apprehension, and every case should be placed under a doctor's care at the earliest possible moment.

WHOOPING COUGH.

There were 5 deaths from Whooping Cough during the year, two more than in 1909. Two of the 5 cases were under one year of age; two were between 1 and 5, and one was 5 years old. All the deaths took place in the closing quarter of the year.

ALCOHOLISM.

Seven persons died of Alcoholic excess in 1910, 6 less than in 1909, and less than half the total for 1908.

Of the 7 persons 4 were males and 3 females. All but one were over 50 years of age. The ages of the males ranged from 55 to 66 ; of the females, from 41 to 70.

Two of the deaths were of persons connected with the trade.

CANCER.

The deaths ascribed to Cancer and other forms of malignant disease during the year were 44, less by three than in 1909. Deaths of females preponderated, although to a less extent than last year.

Of the 44 deaths 22 occurred at or above the age of 65. One of the deaths took place at the age of 16 years.

The digestive system was most frequently concerned. Two thirds of all the cases were affected in the stomach, intestine, or other digestive organ. Considerably more than half of these were males.

Precisely one-fourth of the total deaths were due to Cancer of the reproductive system. One of these cases only was a male. Five women died of Cancer of the womb, and five of Cancer of the breast.

There was one example of each of the following conditions among others, Sarcoma of the Lung, malignant disease of the Mediastinum and Epithelioma of the Antrum of Highmore.

PHTHISIS NOTIFICATION.

Forty-five notifications of Phthisis were received by the Medical Officer of Health during the year. Thirty-two of these had reference to cases brought under notice for the first time, nine under the voluntary system current in Chester, and 23 in accordance with the Public Health (Tuberculosis) Regulations 1908. There were 13 notifications of change of address or proposed destination of poor persons who had already been reported as suffering from Phthisis.

The following table shows the number of Voluntary Notifications for five years :—

1906	30
1907	22
1908	27
1909	13
1910	9

The marked fall in voluntary notifications in 1909 may be properly ascribed to the 1908 Regulations which came into force in that year. Poor Law patients, who in previous years had been voluntarily notified, now came within the scope of the Regulations. The further decline of 1910 is matter for much regret ; it suggests that the value of voluntary notification in Chester is a rapidly diminishing quantity.

The ill success of voluntary notification of Phthisis is principally due to a mistaken attitude on the part of patients themselves. If people in general could be induced to recognize that Phthisis is a disease to be cured of, not to die of, and that sanitary supervision and guidance, judiciously given, are of the utmost value in preventing the spread of the malady from one member of a family to another, they would cease to fear notification, either on the voluntary or compulsory plan.

Date of Notification.—Early notification is useful to the patient, and of primary importance to his housefellows. Yet in Chester in 1910 one case was notified at the point of death, while three persons died within a week of notification. One patient died within a fortnight of notification, two in two months, and one in four months.

Age Incidence.—Of the 32 patients the youngest was 18 years old, and six were under 25 years. Eight persons were between 25 and 35 years of age, and nine between 35 and 45. One half of the cases, therefore, occurred in the age period 25-45. They were struck down in the midst of their usefulness.

In England and Wales in a year over 30,000 wage earners die of consumption. The annual loss to the community in wage-earning power is probably not less than £2,000,000.

Duration of Illness.—Duration of illness prior to notification varied from three weeks to 10 years.

Occupation.—Of the male cases notified three were general labourers, five followed dusty occupations or worked in close confinement. Of the rest, one was a vagrant and one a street newsvendor. Of the female cases, five were employed in house work and one was a waitress.

Isolation.—Seven patients had a separate bedroom in the the houses where they dwelt. Thirteen cases were notified from the Workhouse, and two from Common Lodging Houses.

Houses.—All the houses in which cases lived, or had lived, were carefully inspected.

Four houses were constructed on the cave-dwelling or back to back principle.

In three cases the walls, ceiling, and bedding were all dirty, and in one case the floor besides. Three other houses had dirty bedding, and seven were damp.

Dwellers in such houses suffer in mind and body; they lose their natural power of resistance, and consumption claims them as a defenceless prey.

Family History.—In five cases one or more relatives had died of consumption. In one family two members had been swept away ; in another family three.

Habits.—Of males above 18 years, one drank to excess ; the rest with one exception were moderate drinkers. One male and most of the females were total abstainers.

Thrift.—Three of the sick persons had insured their lives.

Sanatorium Treatment.—Five of the cases had undergone treatment at the Chester Workhouse Sanatorium.

This provision, which the City owes to the Guardians, is capable of more extended usefulness than it enjoys at present.

Every effort is made by officials of the Health Department to induce suitable consumptive patients to apply for treatment at the Workhouse Sanatorium, and much is done by the Guardians to smooth the way. But the shadow of the Workhouse lies across the scheme, and patients have been unwilling to seek the benefits which it offers.

In the later stages of Phthisis, for patients otherwise ineffectively isolated, institutional treatment would be of the greatest service in restricting infection. Then the sick person scatters bacilli broadcast, and all who come within range are exposed to danger. When a patient reaches this state his protracted illness has frequently reduced him to penury. He and his family huddle together in some cramped inadequate dwelling; they suffer from want and misery, and the spread of the disease among them is inevitable.

If public money should be placed in the hands of local authorities for purposes of sanatorium construction, the management of poor dying cases should receive special attention.

TUBERCULOSIS.

The deaths from all forms of Tuberculosis during 1910 were 69 in number. This is equivalent to a Tuberculosis death rate of 1·737 per 1000.

Of the 69 deaths 43 were ascribed to Phthisis. Of the rest 16 were due to Tuberculous Meningitis and 6 to Tuberculous Peritonitis. There was one other example of localised tuberculous disease and in three instances the infection was general.

Of the cases which succumbed to Tuberculosis other than Phthisis all but three were under 15 years of age. Forty per cent. died in the first year of life and over 70 per cent. under the age of 5.

Phthisis excepted, Tuberculosis is largely the scourge of children. The milk of tuberculous cows is a frequent source of infection. This is proved by the fact that bottle fed infants are much more commonly stricken than infants fed at the breast.

Against this danger there are two remedies, and both are applied in Chester. These are, *first*, encouragement of breast feeding, urged by the Ladies Health Society in co-operation with the Health Department; and *second*, supervision of the milk supply of the city, carried out by the officials of the Health Department, who take periodical samples of milk to be tested for the presence of tubercle.

PHTHISIS DEATHS.

The number of deaths from Phthisis in Chester, as already noted, was 43 during the year. The corresponding death rate is 1·082 per thousand, the lowest yet recorded.

The result is an incentive to further effort, and a ground of hope for the future.

The following table exhibits the progress which the city has made from 1874 to the present time:—

PHTHISIS DEATH RATE, CHESTER, 1874—1910.

Year.	Phthisis Death rate per 1000.	Year.	Phthisis Death rate per 1000.
1874	2·767	1880	2·204
1875	2·370	1881	1·657
1876	2·330	1882	2·058
1877	—	1883	1·978
1878	2·152	1884	1·978
1879	2·655	1885	1·653

Year.	Phthisis Death rate per 1000.	Year	Phthisis Death rate per 1000.
1886	2·240	1899	1·787
1887	2·186	1900	1·421
1888	2·026	1901	1·391
1889	2·074	1902	1·311
1890	1·569	1903	1·461
1891	1·675	1904	1·250
1892	1·644	1905	1·783
1893	1·556	1906	1·525
1894	1·631	1907	1·548
1895	1·784	1908	1·113
1896	1·518	1909	1·262
1897	1·618	1910	1·082
1898	1·770		

Between 1874 and 1910 the phthisis death rate has fallen from 2·767 per 1000 to 1·082. If the death rate of 1874 had persisted in 1910, the number of deaths from phthisis in the latter year would have been 109. Thus the fall in the phthisis death rate represents to the city 66 lives saved per annum.

Age at Death.—Of the Phthisis deaths over 40 per cent. occurred between the ages of 25 and 45, and 20 per cent. between 45 and 65.

Over thirty per cent. of all who died were under 25 years of age, a relatively higher figure than in 1909, when the corresponding percentage was 12.

Occupation.—Of the males who died in 1910, a number were general labourers. Two followed dusty or sedentary pursuits. One was a street news-vendor.

Of the occupied females 2 were char-women and the rest were engaged in house work or other indoor occupations.

Family History.—In five cases a parent had died of pulmonary tuberculosis and in one case a daughter. There were no other family histories of phthisis in the direct line.

The view that the disease is hereditary in families is now no longer tenable in any strict sense. Cases apparently hereditary are examples of household infection, and should tend to become progressively more infrequent with the spread of knowledge of the proper methods of combating consumption.

Home Conditions.—Four of the houses where deceased persons had resided were on the cave dwelling or back to back principle. The Housing, Town Planning, etc., Act forbids such houses, and their gradual disappearance seems assured.

For efficient isolation a separate bedroom is necessary. This requirement was wanting in more than one-half of the cases.

Duration of Phthisis.—The shortest duration of illness, reported by friends of fatal cases in response to inquiries made, was one month. Other cases were said to have been ill for 2, 3, 5, 7, 9, and 12 months respectively. Of the 43 cases 15 only had been ill for over a year.

It is probable that most of these statements are unreliable. The friends are frequently ignorant of the facts, or they consider a short illness more creditable to the deceased than a long one.

But the figures despite their inaccuracy are significant. They suggest that the sick persons were not under medical treatment or supervision till near the close of the malady and that they had therefore been living in their homes, or moving from place to place for varying periods, in a highly infectious state.

Efficient control of cases of this nature is a matter of urgent necessity. For this, the first requirement is efficient notification.

Voluntary notification of phthisis in Chester has not been of great utility: but the Public Health (Tuberculosis) Regulations of 1908 have proved of value by keeping the Health Department in touch with phthisical poor law cases.

The Public Health (Tuberculosis in Hospitals) Regulations, which will come into force in 1911, will advance the movement by a further stage. They will deal with consumptive patients at charitable Hospitals and Dispensaries. With active co-operation between Medical Men, the Council, and the Council's Officials, the New Regulations cannot fail to render important service.

INFANTILE MORTALITY.

The deaths during 1910 in the first year of life were 137. The corresponding infantile mortality rate per 1000 births is 138.

Comparative returns appear in the following table :—

INFANTILE DEATHS PER 1000 BIRTHS.

Year.	Chester.	England and Wales.	Great Towns.	Smaller Towns.	Rural Districts.
1900	157	154	...	...	...
1901	189	151	...	...	...
1902	119	133	...	...	...
1903	131	132	...	...	...
1904	135	145	...	...	...
1905	136	128	140	132	113
1906	160	133	145	138	116
1907	111	118	127	122	106
1908	120	121	128	124	110
1909	118	109	118	111	98
1910	138	106	115	104	96

The Chester rate for 1910 is therefore high. It is higher than the rates for the year of England and Wales, the Great Towns, Smaller Towns, and Rural Districts.

It is higher by 20 per 1000 than the corresponding Chester figure for 1909, though the general death rate for 1910 is the lowest on record.

The general death rate and the infantile mortality rate do not necessarily rise and fall together. The divergence between them in 1910 may be traced to the following causes.

The lowered death rate at all ages in 1910 as compared with the previous year was principally due to decreased fatality from Scarlet Fever, Influenza, Phthisis, Cancer, and other diseases from which infants are largely or wholly free, so that the reduction in the number of deaths from these affections did not decrease the general infantile mortality figure. Further, while deaths at all ages from Pneumonia and Bronchitis were less in 1909, deaths of infants from these were increased.

Of defects and diseases peculiar to infancy, premature birth and convulsions caused fewer deaths in 1910 than during the previous year : but the gain here is more than counterbalanced by an increase of 8 deaths from Diarrhœa and 15 from atrophy, debility, and marasmus.

The figures on which these statements are founded are given in the following table :—

DEATHS OF INFANTS, CHESTER, 1909-1910.

	1909.	1910.
Diarrhœal Diseases	13	21
Premature Birth	28	21
Atrophy, Debility, and Marasmus	14	29
Pneumonia	7	16
Bronchitis	8	10
Whooping Cough	1	2
Other Infectious Diseases	2	1
Convulsions	22	12
Tuberculosis	8	10
Overlaying	2	2
Congenital Defects	4	7
Other Causes	7	7
	116	138

Every death from diarrhœal disease in the above table, most of the deaths from atrophy, debility, and marasmus, and a large proportion of deaths from pneumonia, bronchitis, convulsions and tuberculosis, amounting in 1910 to more than one-half of the total figure for the year, could have been prevented, and should have been prevented, by proper care of the child.

Diarrhœal deaths are the direct result of incorrect methods of feeding, and many fatalities in other groups named are due to the same cause. They are the result in most cases of a departure from nature's rule that every baby should be fed at its mother's breast for the first nine months of its life.

Breast-feeding baffles diarrhœa. In cases where it does not suffice by itself, it should not be entirely abandoned. It is better to feed a child partly on the breast than not on the breast at all.

Atrophy is frequently due to unsuitable nourishment ; *Convulsions* are often its immediate result. Breast-feeding is helpful against them both.

Hand-fed infants are subject to *bronchitis* and *pneumonia* ; they are liable to contract *tuberculosis* from cow's milk. Again, breast-feeding is the remedy.

A breast-fed infant is protected from many dangers to which hand-fed infants are exposed. To give her baby this protection is the first duty of every mother, a duty in which she should not fail unless for urgent reasons and on the advice of a medical man.

The two tables in the section dealing with the Chester Ladies' Health Society further exhibit the value of breast-feeding.

Infantile Mortality in Courts.—Defective Housing conditions, and the social evils which accompany them, are also potent to extinguish the lives of infants. These influences bear heavily on the inhabitants of the Courts of Chester, and lead among other results to an infantile mortality rate among them which is in excess of that for the city as a whole. The rate for the city in 1910, as noted elsewhere, is 138 per 1,000 births ; for the Courts it is 192.

Twenty-one infants under 12 months died in Courts during the year. Had the rate for the courts been the same as that for the city, 6 of the 21 would have survived.

Thus the questions of Housing and Infantile Mortality stand closely related.

LADIES' HEALTH SOCIETY.

The Chester Ladies' Health Society began its pioneer work as a voluntary agency at the close of 1909. The Society has for its object to combat the causes of Infantile Mortality in Chester, acting for this purpose in co-operation with the Health Department of the Corporation.

Every week during 1910 a list of infants, extracted from the Registrar's Birth Returns, was sent to the Secretary by the the Medical Officer of Health ; a list was also sent each week by the Matron of the Ladies' Benevolent Institute for attending poor married women in child-bed.

These infants are visited fortnightly or oftener by the Society's Lady Visitors. Leaflets on the care of children are distributed by the Visitors, and mothers are taught the value of the breast, of cleanliness, and of open windows.

Some infants are regularly supervised by the Society's Visitors for the first 12 months of life. Others are kept under notice as long as may seem desirable. The care of a certain proportion reverts to the Health Department, and all infants who attain the age of one year are visited by the Council's Lady Health Visitor in order to complete the return regarding them.

The Health Society's Visitors record the results of fortnightly visits on Report Cards provided. The cards are intended to be sent each month to the Society's Secretary, and forwarded each month by her to the Medical Officer of Health.

The following questions appear on the reverse side of the card, which is here reproduced :—

REPORT CARD.

Name of Child ....

	First Fortnight.	Second Fortnight.
Date of visit		
Age in weeks		
FOOD—		
Breast-fed only		
Breast and		
(a) Cow's milk		
(b) Other food, viz.		
Hand-fed only		
(a) Cow's milk		
(b) Other food, viz.		
ILLNESS—		
Any Illness, and, if so, what ?...		
If illness serious, referred to ...		
Result of Illness		
HEALTH—		
No. of Teeth		
Weight		
Sleeping well or ill		
Feeding well or ill		
PARENTS—		
Father working...		
Mother working		
Mother well		
Mother in charge		
HOUSE—		
Clean or not		
Airy or not		

The filling in and transmission of these Report Cards appears to have presented difficulties to the Society's Visitors, especially in the early portion of 1910 when matters were in process of organisation. But during the year the reports were made in increasing numbers. Nevertheless they still fall short. They do not do justice to the work which the Society is carrying on. This point is commended to the Ladies' notice.

In the Annual Report for next year an account will be given of all infants under the care of the Society who attain 12 months of life during 1911 or die before reaching that age. In 1910, the first complete year of the Society's existence, it is obvious that there can be no such figures available. Instead, an account will be given of the infants born during 1910 and reported, after visiting, by the Society. The details, which appear in the following tables, deal with the Feeding of Infants. As the infants are followed through 9 months of life, the same infant necessarily counts in more than one line of column 2.

Feeding of Infants Born between 1st January and 31st December, 1910, and Visited between these Dates.

Table i.

Infants alive at end of 1910.

1.	2. Number of Infants on Visiting List.	3. Entirely Breast-fed. *Percentages.*	4. Breast supplemented by Hand-feeding. *Percentages.*	5. Entirely Hand-fed. *Percentages.*
During 1st month of life	52	88·4	5·8	5·8
During 2nd month of life	68	80·0	8·8	13·2
During 3rd month of life	45	80·0	6·7	13·3
During 4th month of life	36	75·0	13·0	11·1
During 5th month of life	30	66·7	10·0	23·3
During 6th month of life	26	65·4	19·2	15·4
During 7th month of life	19	63·2	15·8	21·0
During 8th month of life	12	58·3	25·0	16·7
During 9th month of life	8	50·0	37·5	12·5

TABLE ii.

Infants dead at end of 1910.

1.	2. Number of Infants on Visiting List.	3. Entirely Breast-fed. *Percentages.*	4. Breast supplemented by Hand-feeding. *Percentages.*	5. Entirely Hand-fed. *Percentages.*
During 1st month of life	4	50·0	25·0	25·0
During 2nd month of life	5	20·0	20·0	60·0
During 3rd month of life	8	25·0	12·5	62·5
During 4th month of life	3	66·7	...	33·3
During 5th month of life	2	100·0	...	...
During 6th month of life	1	100·0	...	...
During 7th month of life	...	...	...	...
During 8th month of life	...	...	...	...
During 9th month of life	...	...	...	...

These tables furnish striking evidence on the merits of breast feeding. Of infants alive at the end of the year 88 per cent. had been breast fed during the first month of life; of infants dead at the end of the year, only 50. In the second month of life the contrast is still more evident; of children who survived, 80 per cent. had been breast fed: of those who succumbed, 20. The third month is similar to the second: of the living 80 per cent had been breast fed during the third month, of the dead only 25.

The figures tell their own tale. Further comment is needless.

In addition to visiting, the Ladies' Health Society supports a room for infant consultations. Ninety-seven babies were brought here by their mothers to be weighed between December 1909 and December 1910. Instruction and demonstrations to mothers, on the care of infants, were also given at the room.

In the case of illness of many infants, their mothers are unable to pay for medical treatment. These infants are attended free of charge by Dr. Charis Davies, Honorary Consulting Physician to the Society.

The Society is now wishful to extend its work in two directions.

First, the provision of cheap nourishing dinners for expecting and nursing mothers, and

Second, the supply of pattern sets of garments for babies at the lowest cost price.

By the former measure the infant benefits before, during, and after its birth. The latter is clearly a boon to the child: besides it is an excellent way of enlightening poor mothers on the proper clothing of babies.

In order to carry out these objects the Society, in its last Report, appeals for funds. It should not appeal in vain.

ZYMOTIC ENTERITIS.

Extension of Notification—By resolution of Council in 1907, confirmed by the Local Government Board, Zymotic Enteritis occurring in infants under one year of age during the months of July, August, and September, was declared a notifiable disease for three years in Chester under the provisions of the Infectious Disease Notification Act, 1889. The three years in question were 1907, 1908, and 1909.

In 1910 an application was made to the Local Government Board to confirm the notification on similar terms for a further period. In acceding, the Board increased the notification age from under one year to under five. At the same time they indicated that they gave consent with reference to 1910 only.

Notification of Births Act—Under these circumstances it was clear that the time had come for Chester to consider the advisability of adopting the Notification of Births Act, 1907.

On 6th December, 1910, the Public Health Committee recommended to the Council that the Act be adopted within the City, on a date to be subsequently fixed by the Local Government Board. This was the stage of progress at the close of the year.*

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* The Notification of Births Act was adopted by the Council with the sanction of the Local Government Board. It came into operation within the City on 1st March, 1911.

PREVALENCE OF ZYMOTIC ENTERITIS.

The following table shows the number of cases notified in 1910 as compared with previous years :—

ZYMOTIC ENTERITIS, CHESTER, 1907—1910.

Year	Age.	Notifications.	Deaths of Notified Cases.	Percentage of deaths.
1907	Under 1 year	33	7	21
1908	Under 1 year	21	4	19
1909	Under 1 year	25	4	16
1910	Under 1 year	26	7	26
	1—2 years	22	2	9
	2—3 years	5	...	...
	3—4 years	1	...	...
	4—5 years	...	...	...
	Under 5 years	54	9	16

As regards cases under one year of age, it is seen that the notifications and deaths in 1910 are greater than in 1908 or 1909. In deaths 1910 equals 1907, and the percentage of deaths to notified cases in 1910 is the highest in the series.

In 1910 the total number of notifications was 54. Twenty-six of these were under one year of age ; 22 between one and two years ; and 6 two years old and upwards. Between four and five years no notifications were received.

All the deaths occurred under two years of age, and the majority under one. The percentage of deaths to notifications under one year was 26 ; under two years nine.

The prevalence and severity of Zymotic Enteritis in the earliest years of infancy is clearly suggested by the figures.

Type of Disease.—Of the 26 cases *under one year* all with one exception had both Diarrhœa and Vomiting. Eight had Convulsions besides, and of these four died.

The total deaths under one year were seven. One infant died within two days of onset, one within five days, two within a week, and the rest after three, four, and six weeks illness respectively.

Two of the notified cases were illegitimate; both were fatal.

The disease in the first year of life was of a severer cast in 1910 than in 1909.

1—2 years—Of 22 cases all had Diarrhœa and Vomiting. Four had convulsions also, in one case with fatal results.

The total deaths in this group were two, within three and nine days of onset respectively.

2—3 years—Of five cases notified all recovered.

Two had Diarrhœa alone, three Diarrhœa and Vomiting, and one of the latter Convulsions besides.

3—4 years—Only one case was notified in this age group. The child had both Diarrhœa and Vomiting. It recovered within a fortnight.

4—5 years—No notifications were received between four and five years of age.

Feeding.—Two infants *under one year* were exclusively breast-fed up to the onset of illness. Both recovered.

Four had not been weaned but their natural food had been supplemented with rusks and bread. These all became well.

The remaining cases had been weaned at ages ranging from birth up to onset of illness. They were being nourished with cows milk, patent foods, and scraps of adult fare.

The results appear in the following table :—

INFANT FEEDING, UNDER ONE YEAR, CHESTER, 1910.

	Notifications.	Deaths.
Exclusively breast-fed ...	3	...
Partially breast-fed ...	4	...
Hand-fed—		
Cow's Milk and Barley Water	7	2
Cow's Milk and Patent Foods	8	4
Cow's Milk and adult fare ...	4	1
	26	7

The fatal cases fed with cow's milk and barley water had both been weaned at birth. Both died at the age of two months. One was illegitimate.

1—2 years—These children had adults' food, supplemented in five cases by mothers' milk, in two by cow's milk, and in one by patent dietary.

Three of these were just over 12 months, 6 were not more than 15 months, and 7 not more than 18 months old.

Of the two fatal cases one which was on adult fare was just over 12 months old.

2—5 years—The dietary of the older children offered no matter for special comment.

Weaning.—Of the infants *under one year* of age five had been weaned at birth ; of these three died. One infant which was weaned at the age of one week also succumbed. Others had been weaned at various ages up to six months. Seven were breast-fed up to the onset of illness.

Details follow in tabular form.

WEANING.

Infants under One Year, Chester, 1910.

Age of Weaning.	Cases notified.	Deaths.	Percentage of deaths to notified cases.
At birth	5	3	60
1—4 weeks	5	2	40
1—3 months	8	2	25
3—6 months	1	...	...
Not weaned	7	...	...
	26	7	26

Of the two fatal cases *at higher ages*, one had been weaned at 12 months ; the other was breast-fed till the onset of illness.

Six children had not been weaned at ages ranging from 12 to 18 months. In addition to breast-milk, they had adult fare.

Feeding Bottle.—Of the handfed infants under 12 months old, 18 had feeding-bottles. Seven of the bottles had rubber tubes, while eight were tubeless.

One feeding-bottle was dirty. One which was associated with a fatal case, had been destroyed immediately before the visit of inquiry.

Dummy Teats.—Of the 26 cases under one year, 15 had dummy teats. Four of the 15 died. One of the teats was obviously dirty.

Of the children between one and two years, three had dummy teats. One of the three died. Above the age of two years the dummy teat was discarded.

Dummy teats should never be given to infants. They are laden with disease-producing germs, which they convey by stealth into infants' mouths, and produce incurable mischief.

Cleanliness.—*Milk Vessels.*—Three children *under 1 year* had milk which was stored in dirty vessels. A pantry as a rule was the place of storage: but in 3 cases the milk was kept in the living room, and once in a back yard. *Between 1 and 2 years* there were 6 examples of dirty storage, and 4 of storage in an unsuitable place.

Persons.—Four children in the first year of life, and 7 over that age, had parents who were deficient in personal cleanliness.

Family History.—*Under 1 year.*—In half of the families concerned there had been previous deaths of children: and in 3 cases still-births were reported.

There were 9 examples of previous fatality from Zymotic Enteritis: and other children in the families concerned had died from Pneumonia, Convulsions, Premature Birth, and other causes.

1—2 years.—At this age there were 10 instances of previous fatal illness in families. In 2 cases the illness had been Zymotic Enteritis.

At higher ages there were 4 examples of previous deaths in families.

In 1 fatal case three previous children had died in infancy, and another was still-born.

House Flies.—In every case up to 2 years of age house flies were observed in houses. In 8 houses they were very numerous. In 9 they had access to the milk, and in 3 of the 9 a child died.

The presence of flies at higher ages is not so dangerous as in infancy.

Further reference is made to this important question in the section entitled *Flies and Stable Refuse.*

Occupation of Parents.—Most of the fathers were general labourers. The rest were in casual occupation.

Of 9 mothers who followed an employment after marriage 3 weaned their babies in early infancy in order to work unfettered. And the 3 babies lost their lives.

Blame should not be too lavishly meted out in such cases. The mother's work is essential to the independence of many families, and the desire for independence is not an unworthy motive. To tide poor mothers over the period when the welfare of the infant and of the family clash is a proper object for benevolence, or for the allocation of public money.

Premises.—Fifteen houses were dirty, and several were incredibly so.

In 3 cases the yard paving was loose and broken. These defects were forthwith remedied.

In 6 houses only did the fittings for the storage of refuse escape unfavourable comment. Nine houses had no bin, ashpit or other receptacle : and 3 of the deaths occured in them. Serious shortcomings of this nature were remedied, and minor defects improved.

Fourteen houses had no pantry for the storage of food. Five were on the cave dwelling principle. One family was living in apartments.

Here ends for the present, so far as can be anticipated, the story of Zymotic Enteritis as a notifiable disease in Chester. The notification has been useful inasmuch as it has brought a number of infants every year within the cognizance of the Health Department. It has enabled the department to follow up cases after they occured : to pursue the evil indeed, but not to forestall it.

The Notification of Births Act, now in view, will be a more useful measure still. Its scope will extend to every child born in Chester, and its influence will be preventive.

FLIES AND STABLE REFUSE.

Accumulations of stable refuse are apt to give rise to odours. The resulting annoyance, especially in towns, is sometimes very considerable ; and it is increased if pits are emptied at unsuitable times of the day.

Besides displeasing the sense of smell, stable refuse brings swarms of flies into being. Stable manure pits are among the chief breeding places of house-flies, and premises close by from time to time are subject to fly nuisance.

Flies in a house are a well-known source of mental and physical discomfort. More important still, they spread disease. They inoculate milk and other food with germs. They are the foster parents of Typhoid Fever and Zymotic Enteritis.

To the casual eye the fly has a cleanly appearance, but it has been shown in its true aspect by Dr. Graham Smith in a recent official report. A fly, when feeding on sugar, expels the contents of its crop on to the sugar, and then sucks the surface dry. If typhoid germs are present, as they may be, in its crop, the sugar is left infected.

In order to diminish the nuisance from stable refuse, and hinder the breeding of flies, and reduce the prevalence of fly-borne disease, notice was given by the Council on 28th December, 1910, under Section 50 of the Public Health Act 1875, requiring the removal of all manure or other refuse at regular intervals from all Mews, Stables, and other premises within the City.

The intervals must not exceed seven days.

The hours for removal are as follows :—

From 1st April to 31st October, between 5 a.m. and 8 a.m.

From 1st November to 31st March, between 6 a.m. and 9 a.m.

There are within the knowledge of the Health Department 261 manure pits in Chester, many in densely populated areas. To the inhabitants, and especially to the infants, in these areas, the Council's notice will bring enduring benefits.

DESTRUCTION OF RATS.

In September, 1910, several fatal cases of Plague occurred among the population of Suffolk. Further investigations revealed that Plague was prevalent in the area concerned among rats and other rodents.

The matter attracted considerable public notice, and in November the Local Government Board issued a Memorandum on Plague, with other documents, detailing the symptoms of the disease and the precautions which should be taken, and calling the attention of Local Authorities to the importance of suppressing rats in their districts.

The Public Health Committee gave effect to the Board's recommendations. A copy of the Memorandum on Plague was sent to all Medical Men in the City. The Medical Officer of Health was instructed to prepare a handbill on the destruction of rats, for circulation among householders, property owners, occupiers of stables, and others.

Copies of leaflets 84 and 244 of the Board of Agriculture and Fisheries, which treat of the destruction of rats, were obtained and distributed.

An expert Rat Catcher was engaged for a stated period to deal with any rats on the Corporation property at Sealand, and to place his services, when so directed by the Medical Officer, at the disposal of private persons whose premises were infested.

As parts of Chester Rural and Hawarden Rural Districts abut on the Sealand portion of Chester, the Medical Officers of these districts were communicated with, and steps were taken to enlist the co-operation of householders under their jurisdiction.

The Rat Catcher was on the point of setting to work at the close of 1910.

Apart from the question of plague and the risk of its dissemination, the damage done by rats to property and merchandise is serious. It was estimated by the Incorporated Society for the Destruction of Vermin that the loss due to rats in Great Britain and Ireland amounts to £15,000,000 a year.

Rats appear to serve no useful purpose. Their skins are weak and their fur inferior. It is true that they were used for food during the siege of Paris in 1870, but the circumstances then were exceptional.

Rats inflict much injury on cultivated grains, of which a full-grown rat can consume two ounces daily. They gnaw dry goods, clothing, and leather. They steal the food laid down for poultry, destroy eggs and kill the young birds. They injure vegetables, fruit, and flowers. They cause fires in buildings by carrying matches to their nests, by biting through gas pipes, and removing the insulating material from electric wires. Stone, hard brick, cement, glass, and iron are the only common building materials that are proof against their teeth. In the struggle for existence they adapt themselves to the most varied conditions ; they take up their residence in refrigerating chambers, and grow long fur to keep out the cold. In many ways they lead to depreciation of property and consequent loss of rents and custom.

To exterminate rats in this Country would scarcely be a possible task, but it is perfectly practicable to keep down their numbers, and exclude them from places where they can work mischief. The cost of so doing is not entirely negligible, but it would be small in comparison with the enormous loss which their un-checked depredations entail.

The following is the text of the Handbill on the Destruction of Rats authorised by the Public Health Committee. It briefly outlines certain measures which are recognised as effective.

City of Chester.

DESTRUCTION OF RATS.

Attention is hereby directed to the importance of killing off Rats, and keeping them out of houses and places where people live or work.

An Infectious Disease of Rats is known to spread from them to human beings, with serious results.

Apart from this, Great Damage is done to Property by Rats.

RATS SHOULD BE KILLED.

This may be done by Hunting them with Dogs and Ferrets, or by Trapping them in Spring Traps. The special Viruses have been found useful. Poisons are effective: but poisoned baits must be laid out of the way of people and domestic animals, and carefully kept under notice. No one method should be trusted to; a combination of several is best.

BUILDINGS SHOULD BE MADE RAT-PROOF.

Thus holes in Floors and spaces under Doors should be closed, and necessary openings in basements guarded with airbricks or suitable gratings.

Burrows and Nests of Rats should be filled up or dug out. Defective Drains should be repaired.

Houses should be kept Clean and Tidy, so as not to attract Rats. Waste Food should not be allowed to lie about, or Refuse of any kind to accumulate in houses, yards, or passages.

The presence of a Cat in a house is helpful.

If many Rats are found dead or dying on premises at a time when no steps are being taken to kill them, this may be due to infectious disease among them, and the facts should be reported to the Medical Officer of Health at the Town Hall.

BY ORDER.

Town Hall, Chester.

CANAL BOATS ACTS, 1877 and 1884.

Chester is a Registration Authority under the Canal Boats Acts. On the Register at the close of 1910 the number of canal boats was 493, less by 40 than at the end of the previous year. This considerable decrease was due to the removal from the Register of all boats which had been destroyed or fallen into dis-use.

Ten new boats were added to the Register during the year.

The number of inspections in 1910 was 269, more by 101 than 1909. In the Annual Report of the Local Government Board for 1909-10 the Inspector under the Canal Boats Acts includes Chester in a list of the Authorities which have made the largest number of inspections in the past eleven years.

Thirty-three of the boats inspected infringed the Acts and Regulations in respect of the following 62 details:—

CANAL BOATS, CHESTER, 1910.

Absence of Certificate	1
Certificate not identifying Owner with Boat ...	2
Marking Defective	6
Overcrowding...	1
Female over 12, improperly occupying	1
Painting Defective	24
Dilapidation	26
No Proper Water Vessel	1
	62

Notices were served, and subjects remedied in 55 cases by the close of the year. Seven items were still outstanding.

The total number of persons for which cabins were registered was 1,094, the number of persons actually in occupation was 980, of whom 556 were adult males, 225 female adults, 105 children of school age, and 94 children under school age.

There were four births on Canal Boats during 1910, and two deaths. Two other persons were removed from Canal Boats while suffering from illness, and died in the General Infirmary.

One case of infectious disease occurred in connection with a Canal Boat. The boat arrived in Chester with a child sick on board. The cause of illness was not suspected by the parents, and the patient was removed to her home in the city. Next day a medical man, who was called, pronounced the disease to be Scarlet Fever; and the child was at once taken to the Isolation Hospital.

The boat by this time had passed on; but she was traced to Ellesmere Port. Here she was disinfected, and a certificate of disinfection was returned in due course to the Chester Health Department.

The number of inspections carried out during the year at the request of masters in order to clear the Complaint Notes of other Authorities and comply with the Acts and Regulations, was 25.

FACTORY AND WORKSHOP ACT, 1901.

There were 239 Workshops on the Register at the close of the year, an increase of 40 over 1909. The following occupations, among others, were represented :—

WORKSHOPS, CHESTER, 1910.

Dressmakers and Milliners	54
Tailors...	34
Bootmakers	28
Cabinet Makers and Joiners	20
Saddlers and Harness Makers	6
Printers, Blacksmiths, Fitting and Repairing Shops, Laundries, each 4	16
Brushmakers, Drapers, Builders, Bookbinders, Tinsmiths, each 3	15
Basketmakers, Coachbuilders, Cycle Repairers, each 2 ...	6
Miscellaneous	17

Fifty-three defects were brought to light. All were nuisances under the Public Health Act. Details follow :—

DEFECTS IN WORKSHOPS, 1910.

Want of Cleanliness...	26
Want of Ventilation...	1
Other Nuisances	17
Sanitary Accommodation insufficient	2
Sanitary Accommodation unsuitable	6
Sanitary Accommodation not separate for sexes	1
	53

Notices or letters were sent, and all requirements with two exceptions were complied with by the close of the year.

All questions standing over from 1909 were settled and defects remedied.

H.M. Inspector of Factories sent 21 notices of infringements discovered by him in 1910. Nineteen had been completely dealt with by the close of the year, while two were still outstanding.

H.M. Inspector received from the Health Department two notices of occupation of Workshops.

SHOP HOURS ACT, 1892.

SEATS FOR SHOP ASSISTANTS ACT, 1899.

Ninety-five inspections under the above Acts were made during the year.

Under the Shop Hours Act there were 14 contraventions. All were rectified without delay.

The hours of work per week varied from 12 to 72.

In respect of the Seats for Shop Assistants Act there was one contravention, which was put to rights.

HOMEWORK AND OUTWORKERS.

The names of outworkers submitted by employers in February were 20 ; in August 38. In February eight were males and 10 females ; in August 18 were males and 20 females.

The distribution between males and females was as follows :—

Tailoring, 12 : 9 males, 3 females.
Boot Repairing, 15 : 14 males, 1 female.
Shirtmaking, 6 : 0 males, 6 females.
Embroidery and Fancy Work, 4 : 0 males, 4 females.
Plain Sewing, 10 : 0 males, 10 females.
Dressmaking. 6 : 0 males, 6 females.
Upholstery, 2 : 1 male, 1 female.
Blindmaking, 2 : 0 males, 2 females.
Motor Veil Making, 1 : 0 males, 1 female.

No contravention of the Truck Acts came under notice. None of the work, so far as could be ascertained, had been sub-contracted.

In four cases the premises in which the work was carried on were found to be dirty. In each case a notice was served, and the condition remedied.

No case of ill-health was reported among outworkers during the year.

For *Tailoring* the pay was according to log. It ranged from 2/- to 35/- per week.

For *Boot-repairing* and *Bootmaking* the average weekly earnings varied between 4/- and 35/-.

For *Shirtmaking* payment was at the rate of 8d. and 10d. per shirt. One of the shirtmakers earned 1/6 per week, and another 3/-. The highest weekly figure was 10/-.

For *Embroidery* and work of a similar order the lowest weekly average was 3/- ; the highest 25/-.

For *Plain Sewing* the range was somewhat less than for Embroidery. The lowest payment was 2/- per week, and the highest 14/-.

For *Dressmaking* earnings varied between 5/- and 25/- per week.

For *Upholstery* the two persons concerned each received 5/- per week.

For *Blindmaking* the weekly average taking was 3/-, and the *Motor Veil Maker* had 1/6.

The above Homeworkers fall into three groups ; *first* those who do the specified work only, and depend on it for a living ; *second* those who do the specified work in order to supplement the meagre earnings of some other unremunerative occupation, and *third* those who do home-work as a pastime, being otherwise in circumstances of moderate comfort.

These three groups have little in common ; they are little disposed to combine for mutual benefit.

Thus home-work contracts, with few exceptions, are entirely free, a matter of arrangement between parties.

Free contracts and excessive hours of labour are the evils of home-work. They are not less injurious to home-workers than many conditions against which the Factory Act is effective.

In certain Government contracts a clause is inserted which provides that all work shall be done on the premises of the contractor. A general prohibition of home-work is neither practicable nor desirable, but each class of work should have its standard wage.

BAKEHOUSES.

The Bakehouses on the Register at the close of 1910 were 43 in number, one less than in 1909. All were inspected.

Four, which were underground, had the Council's certificate in due form.

Seventeen nuisances came to light in the course of the year. Sixteen had reference to dirty walls and ceilings, and one to the absence of water closet accommodation. Notices were served or instructions given, and all were abated forthwith.

One bakehouse was renovated and re-constructed at a cost of £150. A mechanical mixer with electric motor was put in, and the walls were lined with glazed bricks from floor to ceiling.

DAIRIES, COWSHEDS AND MILKSHOPS.

The number of Registered Cowkeepers resident in Chester in 1910 was 27, the same as in the previous year.

Eighty-nine other persons sold milk in the City, three more than in 1909, when the figure was 86. Of the 86, 6 had ceased to sell milk and 9 new names were added to the roll.

Cowsheds.—Fifty-eight visits were paid to cowsheds. Eight sheds which were not limewashed as required by the regulations were dealt with in a suitable manner.

Milk Shops.—One hundred and fifty-two inspections of milk shops were made, and 18 contraventions and defects were revealed and corrected. In 12 cases the milk vessels were uncovered: in 4 cases roofs were at fault, and 2 dairies were dirty.

Milk Cart.—By the Sale of Food and Drugs Act 1899, Section 9, sellers of milk in public places must have their name and address plainly marked on vehicles or cans. There was one contravention of this section during the year. The matter was reported to the Public Health Committee who cautioned the person at fault.

COMMON LODGING-HOUSES.

At the close of 1909 the *Bye-laws* for Common Lodging-houses were awaiting the formal sanction of the Local Government Board. They were allowed on 4th January, 1910.

They are devised among other objects:—

For fixing and from time to time varying the number of lodgers who may be received and for the separation of the sexes.

For promoting cleanliness and ventilation.

For the giving of notices and the taking precautions in the case of any infectious disease; and

Generally for the well ordering of such houses.

The following is a summary of the principal clauses:—

> 2. A keeper of a common lodging-house shall not at any one time receive into such house a greater number of lodgers than shall be fixed by the Council as the maximum number.
>
> For the purposes of this bye-law every two children under the age of eight years may be counted as one lodger.
>
> 4. A keeper of a common lodging-house shall not cause or suffer any person of the male sex above the age of ten years to use or occupy any room which may be used or occupied as a sleeping apartment by persons of the female sex.
>
> Such keeper shall not except in such cases as are hereinafter specified cause or suffer any person of the female sex to use or occupy any room which may be used or occupied as a sleeping apartment by persons of the male sex above the age of ten years;
>
> Provided that this bye-law shall not be taken to prohibit the use and occupation of specified rooms by a husband and wife.
>
> 5. Every room which may be appointed for use as a sleeping apartment by two or more married couples shall be so furnished that every bed shall be effectually screened from any other bed by means of a partition of wood or other solid and opaque material.
>
> 6. Every room appointed for use as a sleeping apartment by two or more married couples shall be so arranged that every bed shall have direct access of light.

7. There shall be painted on or fixed to the lintel or door of every sleeping room in legible letters, the words *for males only for females only*, or *for married couples only*, according as such room shall have been appointed.

8. Every yard shall be maintained at all times in good order.

9. Every floor shall be thoroughly swept once every day, before the hour of ten in the forenoon, and thoroughly washed on Friday in each and every week.

11. All bed-clothes and bedding, and every bedstead shall be thoroughly cleansed, as often as shall be requisite.

12. Every keeper shall cause to be provided separately for each sex a sufficient number of basins, a sufficient supply of water and soap, and a sufficient number of towels.

13. Every keeper shall cause to be provided a sufficient bath of adequate capacity and suitably placed.

20. Every keeper shall cause every window in every sleeping apartment to be opened and to be kept open to the full width from nine to eleven o'clock in the forenoon and from two to four o'clock in the afternoon of every day, unless under specified exceptional circumstances.

21. Every keeper shall cause the bed-clothes of every bed to be removed from such bed as soon as conveniently may be after such bed shall have been vacated.

22. Every keeper immediately after he shall have ascertained that any lodger is ill of any infectious disease shall adopt all such precautions as may be necessary to prevent the spread of such infectious disease

Such keeper shall not allow any other person except the wife or any other relative of such lodger, or except a person voluntarily in attendance on such lodger, to use or occupy the same room as such lodger.

Where the Council may order the removal of such lodger to a hospital, such keeper shall forthwith take all such steps as may be requisite to secure the safe and prompt removal of such lodger.

Where, in consequence of the illness of such lodger, there may be reasonable grounds for apprehending the spread of infection, such keeper after being furnished with the necessary instructions from the Medical Officer of Health shall cease to receive any lodger in the room or rooms concerned.

Such keeper, shall immediately after the death, removal or recovery of any lodger who may have been ill of any infectious disease, give written notice thereof to the Medical Officer of Health, and shall cause every part of the room concerned to be thoroughly cleansed and disinfected, and shall also cause every article in the room to be in like manner cleansed and disinfected unless the Council shall have ordered the same to be destroyed. In this matter he shall comply with all instructions of the Medical Officer of Health.

After cleansing and disinfection he shall give written notice to the Medical Officer of Health ; and, until two days from the giving of such notice shall have elapsed, he shall not suffer any other lodger to be received into the room.

26. Every keeper shall cause every room which may be used as a sleeping apartment by persons other than married couples to be furnished with bedding and iron or other metal bedsteads of a size adapted for one person only.

27. A keeper shall not suffer any bed in any room which may be used as a sleeping apartment by persons other than married couples to be occupied at any one time by more than one person.

29. Every keeper shall securely affix to every bed in the common lodging-house the number of the bed, and shall supply every lodger with a ticket setting out the number of his bed.

35. Every keeper shall maintain in good condition and free from obstruction all means of escape in case of fire which may be provided.

37. Every keeper shall, for the use of lodgers received, cause to be provided in a room of the premises a boiler of sufficient capacity for the washing of the clothes of the lodgers.

38. No person shall in a common lodging-house behave in a riotous, indecent, or disorderly manner.

39. No keeper shall carry on or suffer to be carried on in that part of the premises in which lodgers are received any noxious or offensive trade, business or occupation.

40. Every keeper on receiving from the Council a notice or placard wherein shall be stated the description or number of the room to which such notice or placard may apply, and the maximum number of lodgers authorized to be received at any one time in such room, shall put up or affix and continue such notice or placard in a suitable and conspicuous position in such room.

He shall cause to be painted in legible letters or figures upon the door of every sleeping apartment a number corresponding with the number printed or written by the Council upon such notice or placard.

41. Every keeper on receiving from the Council for the purpose of exhibition a copy or copies of any bye-law or bye-laws for the time being in force with respect to common lodging-houses, shall put up or affix and continue such copy or copies in a suitable and conspicuous position.

42. Every person who shall offend against any of the foregoing bye-laws shall be liable for every such offence to a penalty of five pounds.

Supervision.—The number of Common Lodging-houses on the Register in 1910 was 8, the same as in 1909.

All the houses were limewashed in April and October in accordance with the provisions of the Public Health Act, 1875.

One application was received for the registration of a house as a common lodging-house. It was refused.

Visits were made by the Chief Sanitary Inspector between the hours of 11 p.m. and 1 a.m. to houses which were under suspicion of use as common lodging-houses without being registered in terms of the Act. Five contraventions came under notice.

Four of the persons concerned were prosecuted and fined on conviction in amounts varying from 2/6 and costs to £5 and costs.

The remaining offender was kept under observation.

PROTECTION OF FOOD SUPPLIES.

ANALYSIS OF SAMPLES.

During 1910 one hundred formal samples of food stuffs were taken, and submitted for examination to the Public Analyst:—

Milk	48
Butter	8
Cheese	7
Lard, Margarine, and Coffee—each 5	15
Bread	4
Cream	3
Mustard, Fish Fryers' Fat, Currant Bread, Sweets, Rice, Flour, and Currants each 2	14
Lardine	1
	100

Of the 100 samples 15 were reported by the Analyst as adulterated. Twelve of these were milk samples, precisely the same number as last year, and the remaining 3 were mustard, rice and coffee respectively.

Milk.—The average fat percentage has again declined. The average figure for 1910 is 3·38 per cent. as compared with 3·5 in 1909, and 3·59 in 1908. While 7 milks only in 1910 were below the 3 per cent. standard of the Board of Agriculture, as compared with 8 last year, it is worthy of note that an appreciable number were close to the border line. Their percentage ranged from 3·0 to 3·1. They were justly described by the Public Analyst as poor samples of milk.

The average percentage of non-fatty solids was 8·76. Thirteen of the samples had 9 per cent. or over.

None of the samples contained preservatives.

Of the 48 milk samples, 12, or 25 per cent., were found by the Analyst to be not genuine. Six of the 12 samples were *deficient in cream*, with the following percentage deficiencies, 17·0, 11·3, 1·6, 1·5, 1·3, and 1·3.

The average deficiency of the 6 samples was 5·66 per cent. as compared with 14·06 per cent. in 1909. This is a clear improvement as regards adulterated samples, but taken in association with the low average percentage for all samples examined, it only serves to throw into stronger relief the fact that many milks classed as genuine just satisfied the standard.

Of the 6 samples two showed added water in small amount.

Of the 6 vendors of milk deprived of cream 1 was prosecuted, 1 was intended for prosecution but escaped on a technical point: the others were formally cautioned against a repetition of the offence.

Two samples without being deprived of cream had *added water* to the extent of 17·0 and 10 per cent. respectively. In each case the Vendor was prosecuted.

Five samples were reported as containing sediment, in amounts ranging from less than a grain to 1·4 grains per gallon. Two samples contained the latter quantity. In the remaining 3 the proportion was 1, 0·7 and 0·2 grains per gallon respectively. In 2 examples the deposit consisted of cowdung with sand, in 2 of cowdung alone, and in one of sand alone.

In the case of one of the samples which showed 1·4 grains of deposit per gallon the Vendor concerned was prosecuted. This is the same sample as that referred to above as containing 17 per cent. of added water.

The remaining Vendors of milk containing sediment were officially cautioned.

Butter.—Eight samples of butter were examined during the year. All were found to contain less than 16 per cent. of water, the maximum under the Sale of Butter Regulations 1902.

The average percentage of water in the samples amounted to 14·07. The lowest figure was 12·7.

All the samples were free from preservatives.

Cheese.—There were 7 samples of cheese. The average percentage of fat found in the samples was 32·4, the lowest 28.

Margarine.—In the 5 samples of margarine the average percentage of water was 12·9. The highest proportion of water was 14·5 per cent., and the lowest 11·5.

A recent adulterant for Margarine is Paraffin Wax. All the samples examined were free from this substance.

In the purchase of one of the Margarine samples there came under notice a contravention of the Sale of Food and Drugs Act 1899, section 6, which enjoins the sale of Margarine in a wrapper bearing the word Margarine in half-inch capitals. The offender was cautioned by the Town Clerk.

Lard.—All the 5 samples were genuine, free from cotton seed oil, sesame oil, and paraffin wax.

Coffee.—Of 5 samples submitted for analysis four were genuine. The fifth contained 6 per cent. of chicory, and a letter of caution was sent to the Vendor.

Bread.—The 4 samples were genuine. They contained wheat-flour only, and were free from alum.

Cream.—Three samples of cream were examined in 1910, 2 in June and 1 in October. The June samples contained 0·15 per cent. and 0·2 per cent. of Boric Acid respectively. The October sample had 0·18 per cent. of this preservative.

In his Report, dated 1909, on the Use of Preservatives in Cream, Dr. J. M. Hamill, Inspector of Foods to the Local Government Board, advised restrictions in the amount of boric acid which should be present in cream. From May to October he recommended 0·4 per cent. as a maximum ; from November to April 0·25.

The proportions found in the samples of cream tested in Chester during 1910 were within the suggested limits.

Mustard.—Of two samples one was genuine. The other contained wheat flour to the extent of 5 per cent. The sample was sold in a tin which was labelled *Mustard Compound*. No steps were taken in this case. A small quantity of wheat flour present in mustard has the effect of retaining essential oils and rendering the substance more readily miscible with water. It is stated that mustard mixture is supplied to the Royal Navy.

Fish Fryer's Fat.—Two samples were examined, and both were pronounced genuine beef fat, quite wholesome and free from rancidity.

Currant Bread.—The two samples consisted of wheat flour currants, sugar, and candied peel. Both were genuine.

Rice.—Of two samples taken, one was genuine and free from steatite. The other contained 0·26 per cent. of steatite.

Steatite or French chalk is employed to improve the appearance of rice. In moderate amount it is probably harmless. Reporting to the Local Government Board in 1909, on facing of rice, Dr. J. M. Hamill advised 0·5 per cent. as the maximum limit for steatite. This figure is not exceeded by the sample referred to above.

Flour.—Both samples were genuine. Neither contained alum or nitrites.

Currants.—The two samples were both genuine and free from copper.

Sweets.—The two samples, one of black currant gums, and one of lemon bon-bons, were genuine and free from arsenic or other poisonous metal.

Lardine.—This was genuine. It was found to be a vegetable fat consisting of cotton seed stearine.

Prosecutions.—There were three prosecutions during 1910. All had reference to milk. Details follow :—

1. *Milk.* Deprived of 17·7 per cent. of cream. Ordered to pay costs=£1 0s. 6d.
2. *Milk.* Containing ten per cent. of added water. Fined ten shillings and costs=£1 18s. 0d.
3. *Milk.* Containing 17 per cent. of added water, together with 1·4 grains per gallon of sediment consisting of sand and cow-dung. Fined two pounds and costs.=£3 8s.

Other vendors were officially cautioned.

MILK POLLUTION.

In comparing 1910 with previous years as regards the results of food analysis, the rising standard of cleanliness in milk is worthy of special notice.

The method now practised in Chester of dealing with milk contaminated by cow-dung, hair, sand, and other extraneous solids was inaugurated in 1906. It has thus been in force for four years, and the results are apparent from the following table :—

MILK POLLUTION—CHESTER, 1907—1910.

Year.	Total milk samples examined.	Samples condemned on account of dirt.	Percentage of condemned samples on total milk samples examined.	Degree of Pollution Grains per gallon. Maximum.	Average.	Minimum.
1907	43	6	13	6·04	3·92	1·09
1908	31	5	16	9·0	3·60	1·4
1909	56	4	7	9·5	3·43	0·9
1910	48	5	10	1·4	0·94	0-2

The actual number of samples adversely reported upon on account of the presence of dirt has not varied greatly from year to year.

But the average degree of pollution steadily declined between 1907 and 1909 from 3·92 to 3·43 grains per gallon, despite the high maximum figures of the two last years of the period. In 1910 it has suddenly descended to 0·94.

When 1910 is compared with 1907 it will be observed that the maximum and average pollutions in 1910 are less than a quarter, and the minimum pollution less than a fifth, of the numbers recorded for the first year of the series.

Thus the milk supply of the City is becoming cleaner ; it is to be hoped that in a few more years it will be clean throughout.

BACTERIOLOGY OF MILK.

Six samples of milk were bacteriologically examined by Sir Rubert Boyce during 1910.

The results are tabulated below :—

MILK BACTEROLOGY—CHESTER, 1910.

Serial number.	Tubercle Bacillus.	Bacillus Coli in 1 cc.	Bacillus Enteritidis Sporogenes in 10 cc.
1	...	140	...
2	...	820	...
3	...	220	...
4	...	27	...
5	...	50	...
6	...	50	...

Tuberculosis.—The Tubercle Bacillus was not discovered in any of the samples examined. Last year also it had been reported absent. From 1906 to 1908 inclusive, it was present each year in two or more cases.

The negative result of the tests for tubercle for two years in succession is gratifying so far as it goes: but jubilation is uncalled for. In comparision with the total bulk of milk consumed in the City the number of samples which were bacteriologically examined is necessarily small. Much yet remains to be done before tuberculosis is eradicated from dairy herds in this country.

Bacillus Coli.—In a clean milk this organism is absent from 1 cc or 17 drops. Its presence shows contamination by cow-dung.

In 1910 it was discovered in 1 cc. of every sample tested. In the least polluted sample there was one bacillus in every drop: in the most polluted there were 48.

This is a worse record than in 1909, when three samples in ten were free. It acts in some measure as a counterpoise to the upward tendency revealed in the table entitled *milk pollution Chester, 1907-10.*

Bacillus Enteritidis.—This organism in 1910 was absent from 10 cc. of all the specimens. This is an advance on 1909 when its presence was noted twice.

Leucocytes.—These bodies are the colourless cells of the blood. They were found in permissible quantity in the samples taken.

WHOLESALE DEALERS IN MARGARINE AND MARGARINE CHEESE.

In terms of section 7 of the Sale of Food and Drugs Act, 1899, every manufacturer and wholesale dealer in margarine or margarine cheese is required to register his premises with the Local Authority.

The Chester Register for 1910 contains the names of 15 such manufacturers or dealers, one of whom was added to the roll during the year.

POLLUTED WATERCRESS.

Information was received during the year that certain persons were in the habit of gathering watercress from a sewage polluted water course in one of the County districts of Cheshire and selling the material in the streets of the City. On careful inquiry it appeared that the facts were as stated, though the vendors suspected denied all knowledge of the stream in question.

Samples of watercress which were taken for bacteriological examination were found to exhibit the marks of pollution.

Dr. Meredith Young, Medical Officer of Health of the County, was informed of the circumstances: and prompt measures were taken by him to prevent the collection of watercress from the dangerous beds.

EXAMINATION OF DAIRY COWS.

In a circular dated December, 1910, the Local Government Board require that the Annual Reports of Medical Officers of Health shall contain information as to the examination of dairy cows by Veterinary Surgeons.

Six samples of milk were examined bacteriologically during the year for the presence of tuberculosis. The tubercle bacillus was found absent in all cases. Had it have been otherwise the following course would have been pursued.

The herd would have been examined by the Council's Veterinary Surgeon. The milk of individual cows suspected by him to be suffering from tuberculosis would have been tested bacteriologically for tubercle bacilli. If tuberculosis had been found in any individual sample, the sale of milk from the cow in question would have been prohibited in terms of article 15 of the Dairies, Cowsheds and Milkshops Order, 1885, as amended by article 2 of the Order of 1899.

Thus far the usefulness of these Orders extends, and no further. They deal with the milk only. An Order is needed to deal with the cow.

ICE CREAM TRADE.

The methods of conducting the trade in this commodity were under the notice of the Public Health Committee during the year. Besides receiving a report on the subject the Committee visited several premises occupied by vendors.

Much of the Ice Cream purveyed in Chester is manufactured under good conditions: but a certain quantity is prepared in places which are ill adapted for the work. The street trade to a certain extent is in the hands of persons whose standards of sanitation and cleanliness differ from those current in this country, and the presence of unsuspected or concealed infectious disease among them exposes consumers to undoubted risk.

The powers at the disposal of the City for dealing with the matter are at present inadequate.

The seizure of ice cream under the Public Health Acts can only take place for obvious defects: and the sampling of the substance under the Sale of Food and Drugs Acts has merely served to reveal such impurities as sand and dust. These methods fail to cope with the principal danger.

Bacteriological examination again might possibly reveal the germs of disease if present ; but this procedure occupies time. If successful, it would succeed too late and the mischief to consumers would be already done.

Inspections of premises, which are frequently made by the sanitary staff, have been effective in improving the living conditions of certain vendors; but there are in the City at present no means available for taking steps with direct and intentional reference to the ice cream trade as such.

Powers have been conferred on other Cities and centres by means of local Acts containing such provisions as these :—

Ice cream shall not be prepared in any sleeping room or in any place communicating with a drain.

Ice cream shall not be prepared in such a manner as to expose it to infection or contamination.

Every vendor of ice cream shall forthwith give notice to the Medical Officer of Health of the presence of Infectious Disease on his premises; and the Medical Officer shall be entitled to seize and destroy all ice cream found on the premises, subject to compensation.

Every vendor of ice cream shall have his name clearly marked on his cart.

Powers to enforce such requirements, and to make regulations for the conduct of the business, would be of the greatest service to Chester. They should be sought at the first opportunity.

FRIED FISH SHOPS.

During the year the Fried Fish Shops in Chester were carefully inspected, and their systematic supervision was begun. Of these there were in 1910, 23 known to the Health Department.

The business of a fried fish vendor consists in the sale of fish fried in a medium of oil or fat.

The fish principally used in Chester are hake, haddock, cod, and whiting. The media are dripping, beef-fat, lardine, and cotton seed oil.

The business is well known as a source of nuisance on account of the liberation of vapours which ought to be kept from escaping by means of suitable hoods and flues. These effluvia, however, though they are apt to claim the attention of the passer-by, involve less risk to consumers than structural defects in the buildings and want of cleanliness in preparation of the food, two conditions which tend to occur together.

Nor is it enough that the processes carried out in the front shop and under the customer's eye should pass muster. There should be a standard equally exacting for the storage and handling of fish, the disposal of refuse, and all the work which is done out of sight in the seclusion of the back premises.

In the course of a preliminary inspection of the Chester shops made in the month of June, the following defects among others were noted :—

No hood provided to lead-off frying vapours
Hood provided, but inefficient
Yard surface broken and dirty
Water supply inadequate
Lime washing neglected
Vessels for containing offal unsuitable
Offal not carefully placed in vessels
Packing cases encumbering yard
Refuse permitted to accumulate on premises
Inadequate provision for storage of fresh fish
Dogs and cats frequenting the premises

These and the like conditions concern the welfare of a considerable number of the inhabitants of the City. It is estimated that on a Saturday afternoon and evening several thousand persons in Chester may partake of fish and chips. To poor men and women in lodgings, who have no good facilities for cooking, the simple fare is a boon ; and poor families in their own homes at the cost of a few pence can sup wholesomely enough on fish and chips. To ensure the quality of the food, cleanliness and good order must prevail in the premises of fried fish vendors.

It was, therefore, determined to open a Register and Record of the fried fish shops in the City, to inspect them periodically with the view of effecting structural and other alterations when necessary, and to deal with them also with reference to the soundness of the food purveyed.

From the register and record at the close of the year it was evident that the preliminary and other inspections had resulted in much improvement.

In a few examples only were yards found dirty ; and these were cleansed without delay.

Several instances of defective paving were dealt with under notice followed by compliance.

There were no seizures of unsound fish or other food under section 116 of the Public Health Act, 1875 ; and two samples of fish fryer's fat submitted to the Public Analyst were pronounced genuine.

In a few shops there was still no hood provided to carry off frying vapours ; in a few others the hoods were not efficiently working. These matters were outstanding at 31st December ; but most of the defects enumerated above as discovered at the June inspection had either been remedied completely or placed on a better footing by the end of the year.

FISHMONGERS' SHOPS.

During the year 14 visits were paid to fishmongers' shops. A consignment of 500 herrings was found to be unwholesome, and was surrended for destruction by the vendor.

GROCERS' SHOPS.

Inspections were also made at grocers' shops. In one case a quantity of salvage stock damaged by fire was seized and destroyed. The following is a list of the material in question :—

Condensed milk	200 tins
Mustard	250 tins
The food known as *Force* ...	12 packets
Rice	1 packet

MEAT INSPECTION.

METHODS.

In their circular letter of December, 1910, the Local Government Board require Medical Officers in their Annual Reports to include an account of arrangements made for meat inspection.

In Chester the work of meat inspection is carried out by the Health Department. The Chief Sanitary Inspector is also Meat Inspector. He holds the Meat Inspection Certificate of the University of Liverpool School of Hygiene, and the Meat and Food Inspection Certificate of the Royal Sanitary Institute.

There is no Public Slaughter House in the City, but there are 12 Private Slaughter Houses, six of which are registered, while six are subject to annual license.

Two registered houses and one licensed house are employed for public slaughter.

Slaughter-house Bye-laws came into operation in the City in 1909.

The Slaughter Houses are inspected, as far as practicable, at the times of slaughtering. Intimation of intention to slaughter is not compulsory under the Bye-laws ; nor is there any restriction as to the hours during which slaughtering may be conducted, but in the majority of cases the Inspector is acquainted with the practice of butchers, and is able to arrange his visits at an hour when the work is in progress.

By instruction of the Public Health Committee in October, 1907, a notice was sent to butchers in the City inviting them to communicate directly with the Meat Inspector if any unsound or diseased meat came under their notice in course of business. It was pointed out that by so doing they would be in a position to surrender the diseased meat for destruction, and so to relieve themselves of a certain amount of responsibility. Butchers frequently avail themselves of this facility.

Microscopic and other research conducted at the Municipal Laboratory forms part of the system of Meat Inspection in Chester. During 1910, 47 specimens of diseased or suspected tissues were examined. The details appear under the section entitled *Municipal Laboratory*.

In 1910 the number of Slaughter-house inspections made was 522. In addition to these inspections 30 visits were paid to the Public Market, 12 to the Smithfield, and 74 to butchers' shops.

To the Knackers' Yard, where seized or surrendered meat is disposed of, there were 12 visits.

The total number of visits and inspections during the year was 650.

TUBERCULOUS MEAT.

The following tabular statement, prepared in accordance with instructions of the Local Government Board, indicates the number of carcases or parts of carcases which were found to be tuberculous during 1910, and the action taken in each case in which tuberculosis was detected.

TUBERCULOUS MEAT, CHESTER. 1910.

Surrendered :—		
Whole carcase	18	
Portion	20	
		38
Seized :—		
Whole carcase	0	
Portion	4	
		4
		42

The total number of tuberculous carcases or portions was 42, of which 38 were surrendered and four seized. The high proportion of surrenders to seizures is one of the results of the practice above referred to, by which butchers observing suspicious signs in meat killed by them send for the Meat Inspector to examine the carcase with all its organs.

Five persons were prosecuted during the year in connection with the sale of meat.

Case 1.—The carcase of a sheep affected with liver flukes, Jaundice and Strongylus Rufescens, prepared for sale and intended for the food of man. The person concerned obstructed the Inspector in the execution of his duty, but with the co-operation of the Police seizure was ultimately effected. Fine £1 and costs.

Case 2.—Portions of fore-quarter of cow from which the pleura had been partially stripped, showing the diaphragm studded with tubercles ; portion of liver of cow together with enlarged portal gland from which tubercle bacilli were recovered ; complete pelvis of cow, foul smelling and exhibiting an enlarged intermuscular gland from which tubercle bacilli were recovered ; portion of right hind-quarter of cow showing tuberculous nodules on peritoneum ; portions of left hind-quarter of cow, also displaying tuberculosis of peritoneum ; portion of neck of cow having a putrid odour ; all of these were in process of salting, and were discovered by the Inspector in pickle barrels for the purpose of preparation for sale.

Also, three whole carcases of calves and one portion of carcase of calf exposed for sale, immature and wanting in some or all of the following parts, namely, head, feet, skin.

Fine £15 and £3 3s. costs or three months' imprisonment.

Case 3.—Tongue of ox, affected with tuberculosis ; also pig's liver, spleen and lungs, sheep's head, heart of ox, two neck pieces and tail of ox and beef steak, having a putrid odour. Case dismissed.

Case 4.—Carcase of a sheep, emaciated, moist, affected with parasitic tuberculosis, and having a slightly putrid odour, exposed for sale in the Public Market.

Fine £1 10s. and costs ; and order to pay Veterinary's Surgeon's fee of £1 1s.

Case 5.—Carcase of heifer with right forequarter stripped, and liver and lungs tuberculous, exposed for sale in shop and intended for the food of man. The defendant pleaded that he understood the carcase to have been passed by the Inspector at the time of slaughter. Case dismissed.

The total weight of meat dealt with in 1910 was 8 tons 19 cwt.

The following tables, prepared by the Meat Inspector, exhibit in a detailed and a summary form the results of work for the year:—

MEAT INSPECTION, CHESTER 1910.

DETAILED STATEMENT.

Date.	Description.	Disease.	* Surrendered † Seized
Jan. 5	Entire carcase of cow	Generalized Tuberculosis	*
7	Entire carcase of pig	General Oedema, Echinococcus Cysts of liver and spleen	*
14	Entire carcase of calf	Peritonitis, Flukes	*
14	Entire carcase of sheep	Strongylus Rufescens	†
25	Portions of carcase of ox	Localized Tuberculosis	*
26	Liver, spleen, lungs and heart of cow	Echinococcus Cysts	†
26	Entire carcase of cow	Generalized Tuberculosis	*
Feb. 3	Entire carcase of sheep	Jaundice	†
9	Liver of cow	Cirrhosis	†
9	Liver of sheep	Flukes	†
16	Liver of sheep	Flukes	†
16	Three livers of ox	Cirrhosis	†
23	Two livers of sheep	Flukes	†
23	Three lungs of sheep	Strongylus Filaria	†
23	Liver of cow	Cirrhosis	†
23	Lungs of ox	Tuberculosis	†
24	Entire carcase of sheep	Strongylus Rufescens, Dropsy	*
Mar. 16	Entire carcase of sheep	Peritonitis, Mammitis	*
18	Portions of carcase of cow	Tuberculosis	†
18	Three entire carcases of calves and portion of carcase of calf	Immature	†
24	Entire carcase of calf	White scour	*
29	Liver of heifer	Flukes	†
31	Portions of carcase of cow	Localized Tuberculosis	*
April 1	Entire carcase of sheep	Peritonitis	*
1	Three carcases of lambs	Dropsy	*
7	Two carcases of sheep	Strongylus Rufescens	*
12	Liver of cow	Flukes	*
13	Entire carcase of heifer	Generalized Tuberculosis	*
13	Forequarters of carcase of cow and other portions	Localized Tuberculosis	*
14	Hindquarters of carcase of lamb and other portions	Peritonitis	*
29	Portions of carcase of heifer	Localized Tuberculosis	*
May 2	Liver of ox	Flukes	†
3	Entire carcase of ox	Generalized Tuberculosis	*
6	Entire carcase of heifer	Peritonitis	*
10	Portions of carcase of heifer	Localized Tuberculosis	*

Date.		Description.	Disease.	* Surrendered † Seized
May	11	Entire carcase of ox	Generalized Tuberculosis	*
	12	Portions of carcase of ox	Localized Tuberculosis	*
	12	Entire carcase of sheep	Injured	*
	17	Pluck of pig Head of sheep Portions of carcase of cow	Putrid odour	†
	19	Portions of carcase of cow	Localized Tuberculosis	*
	19	Lungs and pleura of ox	Pleuritis	*
	19	Four livers of sheep	Flukes	†
	23	Head of ox	Calcification of Pharyngeal Glands	†
	26	Hindquarters of carcase of cow	Localized Tuberculosis	*
June	3	Entire carcase of sheep	Strongylus Rufescens	†
	8	Entire carcase of cow	Generalized Tuberculosis	*
	21	Entire carcase of cow	Generalized Tuberculosis	*
	22	Lungs and liver of cow	Cysts and Flukes	*
July	1	Entire carcase of calf	Joint-ill	*
	7	Forequarters of carcase of cow and other portions	Localized Tuberculosis	*
	21	Entire carcase of heifer	Generalized Tuberculosis	*
	22	Portions of carcase of sheep	Fractured ribs	*
Aug.	4	Forequarters of carcase of heifer & other portions	Localized Tuberculosis	*
	4	Entire carcase of sheep	Emaciated and Dropsical	*
	10	Entire carcase of cow	Generalized Tuberculosis	*
	12	Portions of carcase of cow	Localized Tuberculosis	*
	24	Portions of carcase of cow	Pleuritis	*
	31	Portions of carcase of cow	Generalized Tuberculosis	*
Sept.	1	Portions of carcase of cow	Localized Tuberculosis	*
	7	Portions of carcase of cow	Localized Tuberculosis	*
	15	Forequarters of carcase of cow and other portions	Localized Tuberculosis	†
	20	Entire carcase of heifer	Generalized Tuberculosis	*
	21	Entire carcase of heifer	Generalized Tuberculosis	*
	21	Entire carcase of cow	Generalized Tuberculosis	*
	21	Entire carcase of heifer	Generalized Tuberculosis	*
	21	Entire carcase of heifer	Generalized Tuberculosis	*
	22	Lungs and liver of heifer	Echinococcus Cysts	*
	28	Forequarters of carcase of heifer	Localized Tuberculosis	*
Oct.	12	Entire carcase of cow	Generalized Tuberculosis	*
	12	Portions of carcase of heifer	Localized Tuberculosis	*
	18	Two livers of sheep	Flukes	†

Date.		Description.	Disease.	* Surrendered † Seized
Oct.	19	Forequarters of carcase of heifer & other portions	Localized Tuberculosis	*
	20	Entire carcase of cow	Generalized Tuberculosis	*
Nov.	9	Portions of carcase of cow	Localized Tuberculosis	*
	11	Portions of carcase of sheep	Injured	*
	16	Portions of carcase of heifer	Localized Tuberculosis	*
	16	Entire carcase of cow	Generalized Tuberculosis	*
	25	Pluck of Sheep	Flukes and Strongylus Filaria	†
	30	Portions of carcase of cow	Localized Tuberculosis	*
Dec.	7	Entire carcase of heifer	Generalized Tuberculosis	*
	19	Head of Pig	Injured	†
	29	Forequarters of carcase of heifer & other portions	Localized Tuberculosis	†

MEAT INSPECTION, CHESTER 1910.

SUMMARY STATEMENT.

Tuberculosis	42
Liver Fluke	8
Liver Fluke with Abscess	3
Liver Fluke with Cirrhosis	1
Strongylus Rufescens	5
Strongylus Filaria	4
Cirrhosis	4
Peritonitis	4
Fractured Bones	4
Immaturity	4
Pleuritis	2
Jaundice	1
Oedema with Echinococcus	1
White Scour	1
Putrefaction	1
Calcified Glands	1
Joint-ill	1

As more than one diseased condition was discovered in several of the portions concerned, the sum totals of the Detailed and Summary Statements are not identical.

MUNICIPAL LABORATORY.

The following is a review of the work done in the Municipal Laboratory during 1910.

Diphtheria.—227 swabs from the throat and nose were inoculated on suitable media and examined for the presence of the Bacillus of Diphtheria. In selected cases a direct examination was also made without culture.

Phthisis.—15 samples of sputum from cases under suspicion of consumption were sent in and tested for Tubercle Bacilli.

Enteric Fever.—4 specimens of blood were submitted to Widal's Reaction.

Milk.—Besides the examinations referred to in the section entitled *Analysis of Samples* the following tests were applied to samples of milk and cream.

Milk, 4 samples, for the presence of colostrum corpuscles.

Milk, 8 samples, for the presence of bacillus coli, streptococci and bacillus enteritidis sporogenes.

Cream, 1 sample, for the presence of colostrum corpuscles.

Water Cress.—Eight samples of water cress were bacteriologically examined for the presence of polluting germs. The context appears in the section entitled *Polluted Watercress.*

Ringworm.—Thirty-six specimens of hair were examined microscopocally for spores of ringworm.

Sugar.—One consignment of sugar was examined for the presence of the sugar mite, *Acarus Sacchari.*

Gut.—Thirteen samples of gut, ready for sale after treatment by gut scrapers, were examined bacteriologically.

In each case 10 cubic centimetres of sterile water were passed into one foot of gut tied at the lower end, allowed to remain in contact for half an hour, withdrawn under proper safeguards and tested for the presence of bacilli of the colon group, which are normal inhabitants of the animal intestine.

Five samples were derived from oxen, 4 from sheep, and 4 from swine. Four of the samples were salted and 9 unsalted.

Of the four salted guts three failed to show bacilli of the colon group. In the remaining gut they were discovered.

Of the 9 unsalted guts two were found to be free from the bacilli, while seven revealed their presence.

Meat.—Forty-seven examinations were made for the presence of parasites affecting animals whose flesh is consumed for food. The details follow :—

Tuberculosis	35
Anthrax	4
Coccidium oviforme	1
Strongylus filaria	3
Strongylus Rufescens	2
Taenia Echinococcus	2
	47

Water.—The following work in connection with water was carried out during the year.

	Samples.
Chemical—	
Routine examinations of City water supply ...	12
Special examinations of City water supply ...	10
Pumping wells of Chester Water Company ...	2
Bacteriological—	
Routine examinations of City water supply ...	180
Special examinations of City water supply ...	13
Pumping wells of Chester Water Company ...	2
Storage experiments, 288 cultures from	19
Ground and other non-potable waters	20

The *routine chemical examinations* of the water supply are detailed in the section entitled *Chemical Analysis of Water.*

The *special chemical examinations* of water supply were made in order to clear up points which emerged for consideration.

The *chemical examinations* of the Water Company's *Pumping Wells* had for their object to determine the relation subsisting between the water in these wells and in the river close by. The wells were pumped down by the Company's Engineer in order that samples might be taken under conditions suited to the purpose in view.

The *routine bacteriological examinations* of water supply are described in the section entitled *Water Bacteriology.*

The *special bacteriological examinations* of water supply were conducted in some cases in order to ascertain the effect of weather conditions on the water, in other cases in order to test the value of methods used in other laboratories.

The *bacteriological examinations* of the *Pumping Wells* had the same purpose as the chemical examinations. The *storage experiments* are discussed in the section entitled *Duration of Storage.*

The *bacteriological examinations* of *ground and other waters* formed part of a special series.

WATER SUPPLY.

WATER BACTERIOLOGY.

The number of water samples submitted to routine bacteriological examination in 1910 was 180.

These were taken from the River Dee near the Intake of the Water Company prior to filtration, from each of the six sand filters in use at the Upper Works, from the reservoir which receives the filtered water, and from consumers' taps in various parts of the City.

Gelatine Count.—The gelatine count is the result of plating one cubic centimetre of water on peptone gelatine.

Raw River Water.—For samples of raw river water taken at the Water Company's intake the average count over the year was 3,250.

The lowest figure was 550 obtained in October. Other low counts were 630 and 680 both in June, and 710 in September.

The highest counts were 11,200 and 9,600 in November and February respectively. On each occasion the River was in high flood.

Filter Beds.—From the six filter beds in action 114 samples were examined. The average count was seven colonies per cubic centimetre.

The highest was 68 in February, when the raw water contained 9,600. On three other occasions only during the year did the count exceed 25 : the figures were 27 and 28 both in June, and 32 in August. Thus Koch's maximum of 100 bacteria per cubic centimetre was seldom approached and never exceeded.

Of the remaining records for the filters 83 were under 10. Once the water was found to be free from bacteria, and nine times there was one colony.

Pure Water Reservoir.—The average for the year was six colonies per sample. The highest count was 23. The next in order were 16 and 12. All the rest were less than 10. Three samples showed a single colony.

Consumers' Taps.—Water from consumers' taps is liable to contamination from local causes. The samples are taken with every precaution except that of sterilising the taps. This method reveals the precise condition of the water as supplied to consumers.

The 100-bacteria standard was not exceeded by any tap sample. The highest count was 45 : the next in succession were 42, 41, 35, and 25. The lowest figure obtained was five. The average over the year was 18.

The foregoing records are of interest as an indication of the purifying power of the sand filters. The raw water average of 3250 falls to 7 after filtration, and 6 in the pure water reservoir. But the bacteria on which these calculations are based are not necessarily harmful or due to pollution. The test for dangerous contamination is bacillus coli.

Bacillus Coli.—The examination for this organism is made by means of special media and results are expressed in terms of the number of bacilli in one cubic centimetre of water.

Raw River Water.—The average figure for the Raw Water during the year was 15.

The highest records were 36 in November, with the river in high flood, and 35 in December under like conditions. Under similar circumstances a count of 28 was made in February, and again in October.

The remaining samples were below 25. Early in June a specimen of raw water showed no colon bacilli : and one of the tests made in July showed three.

Filter Beds.—Once during the year B. Coli was discovered in the filtered water. This was in the month of August. The sample at fault revealed two colonies.

The Water Company were immediately notified, and the erring filter was put out of action.

Pure Water Reservoir and Consumers' Taps.—Samples from these sources remained free from B. Coli throughout the year.

LIMITATIONS OF SAND FILTERS.

The Water Company's filters, as the foregoing figures show, have a high average efficiency; but the fact that B. Coli has appeared in 1 cc. of the filtered water in each year from 1907 to 1910 points the lesson that high average efficiency is not enough.

If filters alone are to be relied on, nothing short of infallibility would suffice. But filters cannot be made infallible. As a single bulwark they can never confer complete security on consumers of river water. An additional line of defence is necessary. The water should be purified prior to filtration by storage in a reservoir.

The importance of this question to the City cannot be overestimated. In order to place it in its proper setting it is necessary at this point to review the history of water supply in Chester.

HISTORY OF WATER SUPPLY IN CHESTER.

The water supply of mediaeval Chester was principally derived from wells.

In 1600 the Corporation granted a licence to one Tyrer to lay pipes for distributing water from the River Dee in and about the City. The works were near the Bridge Gate.

In 1692 a grant was given to John Hopkins and John Hadley to reconstruct and extend Tyrer's works which had fallen into disrepair.

In 1826 by Act of Parliament a company was constituted under the name of the City of Chester Waterworks Company, with power to resort to the River Dee opposite Barrel Well Garden for the purpose of obtaining a competent supply of water for inhabitants of the City.

In 1854 the Corporation, being dissatisfied with the quantity and quality of water supplied by the Company, and with the position of their intake, applied to Parliament for a Bill to supersede them ; but the Company undertook to construct suitable works, and the Corporation desisted from their purpose.

In 1857 the Chester Waterworks Company as now existing was incorporated by Act of Parliament. The situation of the intake, however, was not altered. It remained at the Barrel Well.

In 1867 the Company, at the instance of the Corporation, removed their intake higher up the river to its present site—a point 2,743 yards, or a little more than 1½ miles, above the causeway which divides the Upper from the Lower Dee.

In 1874 the Company obtained a further Act which dealt with financial and other matters.

By 1879 the Corporation had laid an intercepting sewer to receive all sewage from the City north of the River, and conduct it to Disposal Works 1½ miles below the causeway. A few years later the sewage of Queen's Park on the south side of the Dee was intercepted and discharged below the causeway. Thus the upper River on both its banks was protected from Chester sewage with some completeness.

In 1884, by the Chester Improvement Act of that date, the Dee above the causeway, which is intermittently tidal, was declared to be a stream within the meaning of the Rivers Pollution Prevention Acts.

In 1890 Dr. Ballard made two Reports to the Local Government Board, one on the prevalence of Enteric Fever in Chester, the other on the Chester Water Supply. In the former, which is referred to in the section of this Report entitled Enteric Fever, he exonerated the Dee as a source of disease in the past. In the latter he expressed a fear, a suspicion and a warning with regard to the River in the future. As a result a Special Committee was appointed by the Corporation to inquire as to the water supply of the City.

In 1894 the Special Committee reported. They made four recommendations : *first*, further interception of sewage on the south side of the river ; *second*, power to the Corporation to enforce the Rivers Pollution Prevention Acts with respect to the Dee ; *third*, provision of storage accommodation by the Water Company so that they might never draw on the River when impure through floods or tides ; *fourth*, the erection of sluices at the causeway to control tidal influence.

Thus the proposal of storage takes its origin from the Report of the Special Committee in 1894.

In 1896 the Corporation promoted a Bill, known as the Sluices Bill, to obtain the powers and construct the sluices advised by the Special Committee. A Committee of the House of Commons refused the powers on the ground that they could be obtained under existing Acts. In the matter of the Sluices, they found the preamble of the Bill not proved.

While the Sluices Bill was in course of promotion a report on the Dee by Dr. Bruce Low, dated 1895, was issued by the Local Government Board. The report in substance was to the effect that the river was not a safe source of public water supply even with the best known methods of sand filtration. Or, in other words, sand filtration alone was not an adequate safeguard.

By 1897 effect had been given to the Special Committee's advice with regard to the interception of sewage from the south side of the city. Sewage which had been discharged into the Dee immediately below the causeway was led across the river and so to the Disposal Works.

In 1897, as suggested by the Committee of the House of Commons on the Sluices Bill, the City with Cheshire and Flintshire aiding petitioned the Local Government Board, under section 14 (3) of the Local Governmeni Act 1888, for a Provisional Order constituting a Joint Committee to have the powers of a Sanitary Authority under the Rivers Pollution Prevention Act 1876 with respect to the River Dee. At a Local Inquiry held in Chester the application was opposed : and in the opposition Flintshire, facing about, joined. In 1899 the Local Government

Board made it known that they had, for reasons which they indicated, decided not to issue the Provisional Order petitioned for.

In 1907 a Bill was promoted by the Corporation of Birkenhead to supply that Borough with water from the Alwen and Brenig, tributaries of the upper Dee. The impounding of these streams would necessarily reduce the volume of the Dee as it flows past Chester: and the City opposed the Bill with intent to defeat it. Failing this, protecting powers were obtained, entitling Chester to apply to Birkenhead for a supply of water in bulk, should conditions arise within a specified time to render this necessary or desirable.

Since 1907 Dr. A. E. Thomas in his Annual Reports as Medical Officer of Health pressed, in the light of recent knowledge, the proposal for water storage originally put forward by the Special Committee in 1894.

In the Annual Report for 1909 the point was urged once more by the Medical Officer at present in office.

On the 16th day of November, 1910, the Chester Water Company gave Parliamentary Notice of their intention to promote a Bill authorizing them, among other matters, to provide accommodation for storage.

PRINCIPLE OF STORAGE.

Accommodation for storage would be afforded by the construction of a reservoir into which the raw water of the Dee should be drawn, in which it should lie for a certain period till it had purged itself in large measure of its pollution, and from which it should be run on to the sand filters in a state of high relative purity. This system has been found effective in the hands of the Metropolitan Water Board, who supply London with water from the Rivers Thames and Lee.

While there can be no doubt that the method suggested by the Corporation and now proposed by the Company is appropriate to the purpose in view, it was not apparent on general principles what duration of storage should be accepted as sufficient to render Dee water safe. The figures given for Metropolitan Waters by Dr. Houston, Director of Water Examinations to the Metropolitan Water Board, might or might not be applicable to Dee Water: and it was therefore determined to conduct during the first six months of 1910 a series of experiments in the storage of Dee Water, in order to ascertain as far as was possible under laboratory conditions what length of time sufficed to remove the traces of pollution.

LENGTH OF STORAGE FOR DEE WATER.

Samples of water were therefore taken from the Water Company's intake and from various other positions in the river, *i.e.*, opposite Barrel Well, beneath the Suspension Bridge, and at Crane Wharf below the causeway. These other places were selected in order to make the conditions of experiment as stringent as possible, by observing the effect of storage on water of worse qnality than the Company draw for filtration.

Nineteen samples in all were taken. They were stored in the Laboratory of the Health Department in glass bottles of one litre capacity under various condition of temperature and exposure to sunlight for periods ranging from five to ten weeks. Each sample was tested prior to storage, at the end of every week up to the fifth, and in the case of samples observed for ten weeks, at the end of the tenth week also.

The progressive reduction in the number of bacteria, was taken as a measure of the extent to which the water had improved in quality.

In a few examples B. Coli only was dealt with; in most the colonies growing on gelatine and on agar were also taken into account. From the 19 samples 288 cultures were made.

It is out of the question to reproduce all the figures here. A few typical examples will be quoted.

A sample was taken at the Waterworks intake on 2nd March, 1910, and was stored in the laboratory in daylight for ten weeks ending 11th May. The results of examinations at weekly intervals were as follows :—

SAMPLE TAKEN AT WATERWORKS INTAKE, ON 2ND MARCH, 1910.

Date 1910.	Colonies growing on gelatine per cc.	Colonies growing on agar per cc	B. Coli per cc.
2nd March	2340	201	23
9th March	850	31	3
16th March	370	24	0
23rd March	260	63	0
30th March	340	51	0
6th April	256	29	0
11th May	119	8	0

Two weeks storage produced a marked reduction in the number of colonies growing on gelatine and agar, and removed B. Coli entirely.

The complete disappearance of bacillus coli is the most important of these results. This bacillus is the evidence of pollution. It is not in itself disease producing, but shows where danger lies.

The following table relates to Bacillus Coli:—

RESULTS OF TESTS FOR BACILLUS COLI IN FOUR SAMPLES, EACH STORED FOR FIVE WEEKS.

At end of Weeks	Taken opposite Barrel Well, 16th Feb., 1910. B. Coli in 1 c.c.	Taken at Waterworks Intake, 6th April, 1910. B. Coli in 1 c.c.	Taken at Waterworks Intake, 11th May, 1910. B. Coli in 1 c.c.	Taken beneath Suspension Bridge, 18th May. 1910. B. Coli in 1 c.c.
0	24	10	15	47
1	3	3	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
	Stored in Daylight.	Stored in Daylight.	Stored in Sunlight.	Stored in Sunlight.

The 4 samples were drawn at the positions and on the dates specified. They were stored for five weeks in the laboratory, two in diffused daylight and two exposed to the rays of the sun. In every case bacillus coli had vanished after 2 weeks storage.

These figures which are given as types are representative of the experiments as a whole. In no sample taken above the Causeway was the genuine colon bacillus found after two weeks storage. The same statement holds for a sample taken below the Causeway at Crane Wharf.

The result of the experimental work with Dee water has therefore been to show that the water of the river improves in quality by storage, and that the minimum period of storage which should be accepted as adequate may be reasonably placed at two weeks.

In his sixth Report on Research Work, dated November, 1910, Dr. Houston, of the Metropolitan Water Board, gives details of two experiments done by him with Typhoid germs fresh from patients' bodies. He infected two water samples with these germs. In one case the bacilli had disappeared in 7 days: in the other in 14. Finally Dr. Houston drank the infected water at the rate of half-a-pint per day for five days, without any ill effects. This work came under notice after the completion of the experiments with Dee water. Subject to the reservation that the Dee and Metropolitan waters are not identical, it confirms the opinion expressed above that Dee water supplied to consumers in Chester should be stored, before filtering, for two weeks.

CHEMICAL ANALYSIS OF WATER.

The monthly chemical analyses of the City water supply during 1910 showed the results recorded in the following Table:—

Date	SOURCE	Degrees	Parts per Million		Grains per gallon	Quality
		Total Hardness	Free Ammonia	Albuminoid Ammonia	Chlorine	
Jan. 8	Parke's Court, Love Street	7 6	Trace	0·064	1·1	Good
Feb. 8	Shepherd's Court, Newgate Street	4·9	Trace	0·08	0·9	Good
Mar. 8	Claremont Walk, Foregate Street	6·4	Trace	0·07	1·2	Good
April 7	Parry's Entry, Foregate Street	8·6	0·01	0·04	1·2	Good
May 3	Swan Court, Foregate Street	5·5	0·01	0·052	0·5	Good
June 7	Wrench's Court, Duke Street	7·65	0·01	0·05	0·6	Good
July 1	Jackson's Court, Duke Street	8·9	0·02	0·03	1·6	Good
Aug. 3	Posnett's Court, Watergate Row	6·6	Trace	0·08	0·8	Good
Sept. 1	Windsor Court, Duke Street	4·9	0·02	0·10	1·4	Mod. Good
Oct. 25	Kiln Yard, Linenhall Street	5·7	0 01	0·05	1·3	Good
Nov. 23	Trinity Court, Trinity Street	6·5	0·01	0 09	1·3	Good
Dec. 15	Horton's Court, Goss Street	6·9	0·01	0·08	1·2	Good

HOUSING.

HOUSING (INSPECTION OF DISTRICT) REGULATIONS, 1910.

By Order dated 2nd September 1910, the Local Government Board prescribed Regulations, to be cited by the above title, with respect to the manner in which the Inspection of Districts, as defined in section 17 (1) of the Housing Town Planning, etc., Act 1909, is to be carried out. The purpose of inspection is to determine whether any dwellinghouse is in a state so dangerous or injurious to health as to be unfit for human habitation.

The Regulations require provision to be made for a thorough inspection of dwellinghouses and localities, for the preparation of lists of houses requiring attention, for the keeping of records of inspections, for the consideration of such records by the Local Authority at their ordinary meetings, and other matters.

The Public Health Committee directed the Medical Officer of Health to prepare and submit a scheme for giving adequate effect to the Board's instructions.

This scheme was on the point of being submitted at the close of 1910.

HOUSING TOWN PLANNING ETC., ACT, 1909.

By Article V. of the Housing (Inspection of District) Regulations, 1910, the Medical Officer of Health is required to include in his Annual Report information and particulars in Tabular form in regard to the number of dwellinghouses inspected under and for the purposes of section 17 of the Housing Town Planning etc. Act 1909. The information for 1910 follows :—

Dwellings considered unfit for human habitation	5
Representations made to the Local Authority with a view to the making of closing orders ...	5
Closing Orders made	5

NEWELL'S COURT.

The figures given above relate to the houses Nos. 3, 4, 5, 6 and 7, Newell's Court.

In a report presented to the Public Health Committee which dealt with the property in detail, it was indicated that each of the houses named was defective with respect to all or some of the following matters:—

Closet accommodation
Lighting of dwellinghouse
Free circulation of air within dwellinghouse
Access of air to space before dwellinghouse
Dampness
Cleanliness.

WHITE LION YARD AND HERBERT'S COURT.

The premises formerly known by these titles are situated in Crook Street.

White Lion Yard was under the notice of the Council in 1904. As a result of representations then made, one house in it was demolished.

The two properties, together with adjoining dwellings in Crook Street, 53 houses in all, were in 1907 and 1908 the subject of precise and complete reports by Dr. A. E. Thomas, at that time Medical Officer of Health for the City. The opinions expressed in his reports were confirmed by Dr. Bostock Hill, Professor of Public Health in the University of Birmingham.

Beginning in September 1908, negotiations proceeded between the Public Health Committee and the owner of the property, with a view to a reconstruction. The specifications as approved by the Committee dealt with the following requirements among others:—

Abolition of overcrowding on site
Abolition of back to back principle
Laying down of smooth asphalte paving in place of cobbles
Reconstruction of drains, where found defective to testing
Structural improvements, in specified details, of floors, walls and ceilings
Erection of wash houses
Provision of adequate water supply within houses
Provision of pedestal waterclosets, adequate in number and construction, in place of trough closets
Provision of galvanized iron ash bins.

By December 1909, the property as a whole had been raised to a better condition, but a number of important matters were not completed.

On 16th March 1910, an agreement was entered into between the owner of the property and the Corporation to the effect that the work should be finished in a satisfactory manner in 12 months from date.

Further progress was made during the remainder of 1910. By the end of the year the 53 houses had been reduced to 43: but various items were still outstanding.

FLUITT'S COURT AND DUNNING'S COURT.

The premises formerly known by these titles stood in Upper Northgate Street. Dunning's Court contained 13 houses, and Fluitt's Court 9.

The owner in 1909 carried out a reconstruction which had the effect of razing Dunning's Court, reducing the number of houses in Fluitt's Court by one, and producing other changes. The work while in progress came under the notice of the Public Health Committee, and the Medical Officer of Health was instructed to report upon it after its completion.

Reporting in October 1909, the Medical Officer stated that the property as reconstructed showed improvement on its previous condition, especially in respect of the demolition of Dunning's Court and the formation of a passage, ten feet wide and open to the sky, in the frontage of Fluitt's Court. On the other hand, the buildings as they stood presented defects. The new drains failed to withstand the water test, certain apartments were affected with ground damp, and other specified demerits called for remedy.

During portions of 1909 and 1910, steps were taken by the owner to correct the matters at fault. The drains were taken up and properly relaid under the supervision of the Health Department. By the close of 1910 these and other details had been set in order; but some were still outstanding.

COURTS IN GENERAL.

Systematic Inspections of the Courts of the City were made during 1910 as in previous years.

The total number of Courts is 127. The number of defects discovered by inspection in 1910 was 109. All these were remedied.

The external walls of houses in many Courts were limewashed during the year.

SANITARY SURVEYS.

Eighteen sanitary surveys—the same number as in 1909—were made during 1910 at the request of householders. The fees charged were five shillings to one guinea.

These defects, among others, were disclosed.

Obsolete gulleys	24
Obsolete water closets	10
Drains connected directly with sewer	7
Waste pipes untrapped	6
Absence of manholes on drains	6
Rainwater downspouts connected directly with drains	6
Drains defective in alignment, jointing, fall or material	5
Obsolete sinks	3
Absence of receptacles for house refuse ...	2

All these errors were corrected.

OTHER MATTERS.

As a result of inspections made and information received, apart from sanitary surveys carried out by request, a number of other matters affecting housing were dealt with in 1910.

Thus 33 yards were paved, wholly or in part. under the supervision of the Health Department ; 24 water closets of an approved type were put in ; 26 dirty houses were cleansed ; and defective roofs, floors, and spouting likewise received attention.

The drainage reconstructions supervised during the year were 90 in number.

Among these was a work of some extent affecting the houses 52—66 Watergate Street. This was completed in October 1910. It occupied 12 months, cost £240, and entailed the laying of about 600 feet of pipe.

As a necessary adjunct to the above a reconstruction of drains was also supervised at 4—14 Trinity Street.

Building Bye-laws—Further progress was made during the year in the preparation of Building Bye-laws, the want of which at the present time is seriously detrimental to the City.

SEWAGE DISPOSAL WORKS.

Past History.—The Corporation Sewage Works at Sealand have been in operation since 1875.

The original method was treatment with lime, followed by settlement in tanks. The sludge was lagooned in under-drained beds, dried and carted away by farmers.

In 1905 new works were completed at a cost of £70,000 to deal with 1,500,000 gallons of sewage daily by means of sedimentation tanks and percolating filters with automatic revolving sprinklers. The filters ponded, and in 1906 the average daily flow was found to be about 2,000,000 gallons. In the end of 1906, the difficulties were such that the new plant was shut down.

In 1907, under the charge of the present sewage works Superintendent, at that time recently appointed, recourse was had to experimental work. One measured portion of the daily flow was treated by the addition of lime and copperas, sedimentation and subsequent filtration. An equal portion was treated by sedimentation and subsequent filtration without the previous addition of lime and copperas. It was found after a year's trial that both methods gave good results, and the use of chemicals was discontinued. During this period the sewage which was not required for experimental treatment was dealt with by the original liming process.

In 1908, steps were taken to give effect to the teaching of the twelve months' trial. The whole daily flow of two million gallons was turned into the sedimentation tanks. But the existing filtration area did not suffice to deal with the whole of the sewage so sedimented. It was, therefore, determined to pass 1¼ million gallons only of the sedimented sewage on to the percolating filters. The remaining ¾ million gallons, excluded from the filters, was led off by an overflow to undergo secondary sedimentation before discharge at the outfall.

Sludge was disposed of in shallow trenches and under-drained lagoons.

Present Method.—In 1910, the above method is still in force. Its merits—and also its limitations—are apparent from the following table, in which

Column 1, Crude sewage, has reference to sewage prior to treatment.

Column 2, Tanks effluent, relates to sewage after treatment in the sedimentation tanks, before it is run on to the filters.

Column 3, Filter-effluent, is concerned with the effluent from the percolating filters.

Column 4, Final effluent deals with the final effluent as it leaves the works. The final effluent consists in part of the Filter effluent, and in part of that portion of the tanks effluent which is necessarily excluded from the filters and led off to undergo secondary sedimentation.

CHESTER SEWAGE WORKS, 1908-1910.

Average results expressed in parts per 100,000 from 300 24-hour-average samples examined during 22 months, June, 1908, to March, 1910.

	1 Crude Sewage.	2 Tanks Effluent.	3 Filter Effluent.	4 Final Effluent.
Suspended Solids............	23·0	11·2	5·57	7·3
Chlorine........................	7·8	7·85	7·8	7·95
Free & Saline Nitrogen ...	2·75	2·65	0·64	...
Albuminoid Nitrogen......	0·565	0·382	0·132	...
The same, settled............	...	...	0·056	...
Oxygen abs. 4hrs. 80°F....	5·86	3·75	1·56	2·32
The same, settled......	3·14	2·83	0·75	1·65
Nitric Nitrogen...............	...	...	1·44	0·16

These observations were made, and averages calculated, by Mr. W. D. Scouller, B.Sc., Sewage Works Superintendent.

Column 2 in the above table, when compared with column 1 shows the benefit of sedimentation. The suspended solids, in particular, are reduced to one-half.

Column 3 represents a filter effluent of excellent general quality. These samples were taken prior to secondary sedimentation : hence the comparatively high figure for suspended solids.

While columns 2 and 3 display the merits of the present system ; column 4 exhibits its limitations. In respect of suspended solids and oxygen absorbed the final effluent gives higher readings than the filter effluent : in respect of nitric nitrogen its record is lower. These demerits are due to the mingling of the filter effluent with the unfiltered tanks effluent, prior to final discharge. They will disappear whenever the filtration area is sufficiently extended to deal with the whole daily flow.

On p. 221 of the Fifth Report of the Royal Commission on Sewage Disposal, it is written

> "For the guidance of Local Authorities, we may provisionally state "that an effluent would generally be satisfactory if it complied with "the following conditions.
>
> " That, after being filtered through filter paper, it should not "absorb more than
>
> " (a) 0·5 part by weight per 100,000 of dissolved or atmospheric "oxygen in 24 hours.
>
> " (b) 1·0 part by weight per 100,000 of dissolved or atmospheric "oxygen in 48 hours, or
>
> " (c) 1·5 parts by weight per 100,000 of dissolved or atmospheric "oxygen in 5 days."

The Commissioners attach much importance to this test which takes account of the organic matter which is capable of undergoing fermentative change.

The following table shows the result of this test as applied to the Chester Filter effluent.

CHESTER SEWAGE WORKS, 1909-1910.

Average Rate of disappearance of dissolved oxygen expressed in parts per 100,000 from paper-filtered filter effluent, between April, 1909, and March, 1910.

	After 24 hours.	After 48 hours.	After 5 days.
Chester Filter Effluent	0·106	0·192	0·424
Royal Commission Provisional Standard	0·500	1·000	1·500

The table speaks for itself. The Chester Filter effluent is well within the provisional limit. The figures suggest that the present method of treatment by sedimentation followed by filtration is sound, and should be extended so as to deal with the whole daily flow of sewage.

Future Extension.—The Sewering Committee at the close of the year had before them a scheme for the extension of the filters so as to treat the whole of the dry weather flow and storm water, for the further treatment of the filtered effluent by settlement in tanks, and for the provision of stand-by storm water tanks having a capacity equal to ¼ of the mean daily dry weather flow. These proposals are in agreement with recommendations in the Fifth Report of the Royal Commission.

As the intake from which the water supply of Chester is derived is situated on the Dee at a point about 3 miles above the sewage works outfall, and as the intake in question is subject on occasion to tidal reflux which carries with it polluted matter from the lower river, it is necessary, with a view to safeguarding the water supply of the City that provision should be made in extending the sewage works for one further requirement. That is intermittent discharge, so that sewage may always in the first place be carried down on the ebb-tide and never up on the flood.

MEDICAL INSPECTION OF SCHOOL CHILDREN.

The work of medical inspection during 1910 was conducted on lines similar to those followed in previous years.

The Medical Officer of Health of Chester is also Medical Officer for the Schools of the City.

The Assistant Medical Officer of Health holds the additional appointment of Assistant School Medical Officer.

The Lady Sanitary Inspector and School Nurse are one and the same person.

The co-ordination between the Public Health Department and the School Medical Department is thus complete.

The co-operation of School Teachers with the Medical Officer is worthy of reference here. By their vigilance in the discovery of children attending school with suspicious symptoms, they have rendered the Medical Officer material aid in the control of infectious disease. A pamphlet for their guidance in this work was issued during the year.

Ninety-two medical inspections of schools were made in 1910, and 1703 children were examined. The number of defects recommended for treatment was 1056. Of these, 754 were treated; and 661 were either cured or benefited.

WORK DONE BY SANITARY INSPECTORS.

By the Sanitary Officers (Outside London) Order 1910, which took effect on the 1st day of January 1911, it is the duty of the Sanitary Inspector as soon as practicable after 31st December, in each year, to furnish the Medical Officer with a Tabular Statement exhibiting the following particulars:—

(A) the number and nature of inspections made during the year;

(B) the number of notices served during the year, distinguishing statutory from informal notices;

(C) the result of the service of such notices.

The Chief Sanitary Inspector's statement relating to 1910 is appended.

(A) INSPECTIONS MADE.

Subject Matter.	No. of Inspections.
Infectious Disease	329
Phthisis	114
Stables and Manure Pits	582
Canal Boats	269

Subject Matter.	No. of Inspections.
Factories and Workshops	491
Shop Hours Act and Seats for Shop Assistants Act	95
Home-work and Out-workers	69
Bakehouses	74
Dairies, Cowsheds and Milkshops	218
Common Lodging Houses	35
Midnight visits to suspected houses	5
Slaughter Houses	522
Butchers' Shops	74
Cattle Sales Markets	12
Public Market	30
Soup Kitchen	2
Knackers' Yard	12
Fishmongers' Shops	14
Fried Fish Shops	63
Grocers' Shops	4
Ice Cream Trade	41
Sanitary Surveys by request	194
Sanitary State of Courts	741
Drainage	473
Other Housing Defects	619
Supervision of Sanitary Work in progress	1102

(B) Notices Served.

Description of Notice.	Number
Statutory	11
Informal	384
	395

(C) Result of Service of Notices.

The notices enumerated in Table (B) related to 352 Sanitary or other defects, which were remedied or outstanding at the close of the year in the following proportions :—

Description of Defect.	Total No. Recorded	At 31st Dec., 1910. Remedied	Outstanding
Housing.			
Yard paving defective	34	27	7
Internal walls and ceilings dirty	27	24	3
Rainwater downspouts broken	8	6	2
Roofs dilapidated	5	4	1
Sink wastes defective	12	12	0
No Ashbin	39	35	4
Kitchen floor-tiles broken	2	2	0
Bath waste not disconnected	1	1	0
WaterClosets.			
Cistern inefficient	18	17	1
Basin broken or leaking	14	12	2
Soil pipes choked	4	4	0
Compartment ruinous	5	5	0

	Total No.	At 31st Dec , 1910.	
Description of Defect.	Recorded.	Remedied	Out-standing
Drains.			
Chokage	20	19	1
No ventilating shaft	3	3	0
No inspection chamber	5	5	0
Faults of alignment, jointing, fall or material	11	11	0
Workshops.			
Internal walls and ceilings dirty	6	4	2
Water closets insufficiently screened	2	2	0
Water closet compartment dirty	2	2	0
General.			
Internal stable walls dirty	3	3	0
Internal cowshed walls dirty	4	4	0
Internal bakehouse walls dirty	2	2	0
Dirty outer walls in courts	115	114	1
Manure pits ruinous	2	2	0
Overcrowding in houses	8	8	0
	352	328	24

The following tables contain in a concise form an account of the other work carried out by the Inspectors during the year.

WORK DONE BY NEGOTIATION WITHOUT NOTICE SERVED.

	Total Number	At 31st Dec., 1910.	
Description of Defect.	recorded.	Remedied.	Outstanding
Housing.			
Yard paving defective	6	6	0
Internal walls and ceilings dirty	2	2	0
Rain water downspouts broken	6	6	0
Sink wastes defective	7	7	0
No ash bin	3	3	0
Water Closets.			
Basins broken or of obsolete type	12	12	0
Soil pipe ventilators improperly placed	2	2	0
Drains.			
Not disconnected from sewer	5	5	0
Chokage	5	5	0
Faults of alignment, jointing, or fall	19	19	0
Drain constructed of brick	5	5	0
No inspection chamber	10	10	0
Gullies defective	8	8	0
	90	90	0

SANITARY SURVEYS BY REQUEST.

		Number.
Surveys		18
Reports issued		18
Improvements effected :—		
Drains relaid	5	
Drains disconnected from sewer	7	
Manholes constructed	6	
Gullies put in	24	
Waste pipes trapped	6	
Water closets fixed	10	
Modern sinks put in	3	
Rain water downspouts disconnected from drain	6	
Dust bins provided	2	
	—	69
Visits of inspection, and supervision of work in progress ...		194

INFECTIOUS DISEASE.

Cases removed to Hospital	187
Rooms disinfected	443
Infectious material removed for destruction or disinfection ...	117
Library books removed for destruction or disinfection ...	21

OTHER WORK.

Drains smoke-tested	111
Drains water-tested	28
Visits to Hairdressers' premises regarding proposed closing order	67
Consultations by appointment with Architects, Builders and owners of property	193
Smoke observations	18
Samples taken under Sale of Food & Drugs Act	100
Samples of food for bacteriological examination	6
Matters referred to City Surveyor:— (Dangerous buildings 2, street cleansing 4, house refuse 17, illpaved streets and courts 3, ventilation of sewers 7, public urinals 2)	35
Matters referred to Chester Water Co. (water waste) ...	8

WORK OF LADY SANITARY INSPECTOR.

In addition to work done during the year by the Male Sanitary Staff, the following work was carried out by the Lady Sanitary Inspector, who is also Health Visitor and School Nurse.

Infectious Disease.

Visits to patients after discharge from Isolation Hospital ...	368
Visits to Scarlet Fever patients nursed at home	78
Visits to Scarlet Fever Suspects	2
Visits of Enquiry regarding Puerperal Fever	14
Visits to Cases of Ophthalmia Neonatorum	10
Visits and Revisits to cases of Phthisis	22
Visits to other Notifiable Diseases	5

Infantile Mortality.

Birth Enquiries on behalf of Ladies' Health Society	6
Visits of Enquiry regarding Employment of Mothers ...	29
Visits of Enquiry regarding Still-births	21
Visits relating to practice of Midwives	6
Visits to cases of Zymotic Enteritis	156

Other Sanitary Matters.

Visits of Enquiry after Notices served	38
House to House Inspections	38
Visits relating to Complaints	29
Inspections of Courts	55
Inspections of Outworkers' Premises	22
Inspections of Workshops	7

Schools.

Routine Medical Inspections	92
Special Medical Inspections regarding Infectious Disease ...	14
Home Visits after Routine Medical Inspection	1798
Home Visits to Special Cases	9
School Visits to Special Cases	24

CHESTER ISOLATION HOSPITAL.

The total number of admissions to Hospital in 1910 was 251, the lowest for five years, as the following statement shows:—

ADMISSIONS 1906—1910.

	Scarlet Fever.	Diphtheria.	Other Diseases.	Total.
1906	110	141	20	271
1907	92	217	14	323
1908	167	122	14	303
1909	482	85	6	573
1910	177	70	4	251

The excess of 1906 and 1907 over 1910, was due to Diphtheria ; of 1908 to Diphtheria and Scarlet Fever prevalent simultaneously ; of 1909 to the Scarlet Fever epidemic of that year.

Details regarding 1910, appear in the following table :—

ADMISSIONS 1910.

	Scarlet Fever.	Diphtheria.	Other Diseases.	Total.
Chester City... ...	134	49	4	187
Chester Rural District	15	13	...	28
Hoole	11	4	...	15
Tarvin, Malpas, and Tarporley	17	4	...	21
	177	70	4	251

The column *other diseases* contains four cases which were sent in for observation. One man who was under suspicion of Smallpox proved after detention in the Smallpox Hospital to be free from that disease. Of two children who had been regarded as suffering from Enteric Fever, one revealed no symptoms of that or any other malady. The other was found to be a case of Appendicitis, and was removed for operation to the Chester General Infirmary. The fourth case, which, prior to admission, had seemed ambiguous, was finally classed as one of mixed infection from scarlet fever and diphtheria.

The average number of beds occupied daily during the year was 41·6. The average length of residence was 54·0 days.

Two scarlet fever cases were under the care of their private medical attendant. The remaining 249 cases were treated by the Medical Officer and his assistant.

Scarlet Fever.—177 persons were sent into hospital as cases of scarlet fever. 162 had the illness specified ; the remaining 15 had other affections. There were nine examples of tonsillitis, two of pneumonia, and one each of chicken-pox, measles, eczema, and gastritis.

Six scarlet fever patients died. This number of deaths is equivalent to a case mortality of 3·70 per cent. One of the fatal cases shortly before admission had undergone surgical operation for empyæma following pneumonia, and so had to meet the fresh infection at a grave disadvantage from the outset.

The complications encountered during the year are noted in the following tabular statement :—

SCARLET FEVER 1910—COMPLICATIONS.

		No. of cases.	Percentage on total cases treated.
Nose	Rhinorrhœa	28	17·3
Ear	Otorrhœa	14	8·6
	Mastoid Abscess	1	0·6
Glands	Adenitis	14	8·6
Eyes	Conjunctivitis	6	3·7
	Stye	2	1·2
Kidney	Nephritis	12	7·4
Heart	Endocarditis	5	3·1
	Arrhythmia	4	2·5
	Dilatation	1	0·6
Lungs	Pneumonia	7	4·3
	Empyæma	2	1·2
	Bronchitis	2	1·2
Mouth	Glossitis	2	1·2
Nervous System...	Herpes	1	0·6
General	Arthritis	2	1·2
	Pyæmia	1	0·6
	Chlorosis	1	0·6
	Paronychia	8	4·9
	Relapse	1	0·6

Of the 14 cases of Adenitis four had Glandular Abscesses which were incised.

Forty-three cases, besides Scarlet Fever, had the following diseases present or contracted, as a rule, before admission to Hospital :—

SCARLET FEVER 1910—OTHER DISEASES.

Disease.	No. of cases.
Eczema	12
Measles	11
Chicken-pox	5
Impetigo	4
Ringworm of scalp	2
Scabies	2
Tuberculosis of knee	1
Tuberculosis of hip-joint	1
Erysipelas	1
Oxyuris vermicularis	1
Inguinal Hernia	1
Urticaria	1
Scald	1

Diphtheria.—Seventy cases were received into Hospital as Diphtheria. Six of the 70 proved after observation to have diseases other than Diphtheria: 5 of these had Tonsillitis and one Catarrhal Jaundice. Four deaths occurred. They represent a case mortality rate of 6·25 per cent., lower than in 1909 by ·6 per cent. and lower than in 1908 by 2·52 per cent.

The complications are stated in the following table:—

DIPHTHERIA, 1910.—COMPLICATIONS.

	Number of cases.	Percentage on total cases treated.
Paralysis of Palate	5	7·8
Paralysis of Eye Muscles	3	4·7
Irregular action of Heart	8	12·5
Rapid action of Heart	1	1·6
Discharge from Nose	5	7·8
Adenitis	5	7·8
Otorrhœa	2	3·1
Nephritis	1	1·6
Sloughing of Soft Palate	1	1·6
Stomatis	1	1·6

Twelve cases had these diseases in addition to Diphtheria—Scarlet Fever 7, Furunculosis of Scalp 2, Ringworm of Scalp, Impetigo and Eczema, each one.

Illnesses of Staff.—Three members of the staff were off duty on account of illness during 1910. Two were nurses and one a housemaid.

Both nurses suffered from Dyspepsia. The maid had injured her leg by a fall.

Lectures.—During the earlier months of 1910 the Medical Officer and his Assistant gave to the Nurses a series of lectures followed by examination. The seniors had a summary course in Anatomy, Physiology, Medicine and Surgery, and an extended course on Fevers. The subjects taken up with the Juniors were Anatomy, Physiology, Medicine and Surgery.

Observation Block.—In June, 1910, an Observation Block was completed and opened for the reception of patients.

This Block, which is one storey high, has walls and roof of corrugated iron, double lined with wood and felt. The floor is two feet above ground level on a brick foundation with damp proof course. The plan of the block is in general rectangular, with its long axis north and south.

The structure is divided by glass partitions into five compartments. Of these, four are cubicles. The central compartment is the Nurse's Room. The arrangement of the glass partitions is such that there is an uninterrupted view from end to end of the Block: thus every patient, in the isolation of his cubicle, is constantly under the eye of the Nurse on duty.

Along the west side of the Block runs a glass-roofed verandah, with which each cubicle communicates by its own door and window. On the east each cubicle opens by another door and window on to its separate exercise ground. By this means there is free cross-ventilation of every cubicle directly to the open air. In the roof of each cubicle is an upcast extraction shaft.

Each cubicle has its own complete ward equipment of washing utensils, locker, screen and the like. Each is supplied with two overalls, one for the Medical Officer, one for the Nurse on duty. Each cubicle is heated by its own radiator, circulating hot water under low pressure from a boiler with centrifugal electric pump in an adjacent building; and each is lighted by its own electric light, controlled from the cubicle itself and also from the Nurse's room.

At either end of the glass-roofed verandah is a compartment with sanitary fittings. From the Nurse's Room a short alley-way runs east to the bathroom and ward kitchen.

From the date of its opening in June, till the close of 1910, the Observation Block was in constant and most serviceable use.

HEALTH DEPARTMENT.

In the autumn of 1910, the Health Department was transferred from Forest House, Love Street, to the Town Hall.

The premises of the Department at the Town Hall consist of nine rooms and a waiting hall. Rooms 1 to 5 surround the waiting hall, from which a staircase leads to rooms 6 to 9 on an upper floor.

Room 1 is the Medical Officer's room. Room 2 is a Laboratory for chemical and bacteriological work. Room 3 is the General Office. Room 4 is set aside for the Assistant Medical Officer of Health, and Room 5 for the Chief Sanitary Inspector.

Room 6 is a Store Room with fume cupboard and disinfecting chamber. Room 7 contains the Town Hall Telephone Exchange, the operator of which is under the charge of the Medical Officer of Health. Room 8 is allotted to the Assistant Sanitary Inspectors; and Room 9 to the Lady Sanitary Inspector.

Rooms 1 and 3 are in telephonic communication with one another, and with the General Telephone Exchange. Rooms 3, 4, 5, 8, and 9 communicate with one another by means of a private system of Metaphones.

Changes of Staff—Miss Annie Townend resigned office as Lady Sanitary Inspector and was succeeded by Miss Ethel M. Cohen, B.Sc., London, recently Lady Health Visitor in the Urban District of Kettering.

Mr. W. Rigby resigned office as Chief Clerk and was succeeded by Mr. E. Foulkes.

The Medical Officer has to acknowledge the consideration of the Council and Public Health Committee throughout the year.

He is indebted for assiduous and competent aid to the Assistant Medical Officer of Health, the Chief Sanitary Inspector and the Assistant Inspectors, the Clerical Staff of the Health Department, the Lady Sanitary Inspectors who held office, and the Matron and Staff of the Isolation Hospital.

CITY AND COUNTY OF THE CITY OF CHESTER.

Table I.—Vital Statistics of Whole District during 1910 and previous years.

YEAR.	Population estimated to Middle of each Year.	BIRTHS.		TOTAL DEATHS REGISTERED IN THE DISTRICT.				Total Deaths in Public Institutions in the District.	Deaths of		NETT DEATHS AT ALL AGES BELONGING TO THE DISTRICT.	
				Under 1 Year of Age.		At all Ages.						
		Number	Rate	Number.	Rate per 1,000 Births registered.	Number.	Rate		Non-residents registered in Public Institutions in the District.	Residents registered in Public Institutions beyond the District	Number.	Rate.*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1900	38717	1092	28·2	157	143	684	17·7	50	28	71	727	18·8
1901	38834	1037	26·7	189	182	729	18·8	58	27	52	754	19·4
1902	38951	1054	27·0	119	113	618	15·9	89	36	62	644	16·5
1903	39075	1064	27·2	131	123	630	16·1	95	41	69	658	16·8
1904	39129	1044	26·7	135	129	596	15·2	86	39	78	635	16·2
1905	39250	1066	26·8	136	127	682	17·3	108	44	68	706	17 9
1906	39325	1063	27·0	160	150	690	17·5	112	37	54	707	17·9
1907	39420	1015	25·7	113	111	629	15·8	109	41	62	650	16·5
1908	39515	981	24·8	118	120	616	15·5	105	53	70	633	16·02
1909	39613	983	24·8	116	118	612	15·4	130	53	86	645	16·28
Averages for years 1900-1909.	39182	1039	26·5	137	131	648	16·5	94	39	67	675	17·2
1910	39711	992	24·9	137	138	577	14·5	102	47	71	601	15·1

Rates in Columns 4 and 8 are calculated per 1,000 of the estimated gross population.

NOTE.—The deaths included in Column 7 of this Table are the whole of those registered during the year as having actually occurred within the district or division. The deaths included in Column 12 are the number in Column 7, corrected by the subtraction of the number in Column 10 and the addition of the number in Column 11.

By the term "Non-residents" is meant persons brought into the district on account of sickness or infirmity, and dying in public institutions there; and by the term "Residents" is meant persons who have been taken out of the district on account of sickness or infirmity, and have died in public institutions elsewhere.

The "Public Institutions" taken into account for the purposes of these Tables are those into which persons are habitually received on account of sickness or infirmity, such as hospitals, workhouses and lunatic asylums.

Area of District in acres (exclusive of area covered by water) 2,862

Total population at all ages	38,309	At Census of 1901.
Number of inhabited houses	7,948	
Average number of persons per house	4·8	

CITY AND COUNTY OF THE CITY OF CHESTER

TABLE II.—Vital Statistics of Separate Localities in 1910 and previous years.

YEAR.	CASTLE SUB-DISTRICT.				CATHEDRAL SUB-DISTRICT.			
	Population estimated to middle of each year. (*a*)	Births registered. (*b*)	Deaths at all Ages. (*c*)	Deaths under 1 year. (*d*)	Population estimated to middle of each year. (*a*)	Births registered. (*b*)	Deaths at all ages. (*c*)	Deaths un 1 year. (*d*)
1901......	20392	588	390	118	18442	449	364	71
1902......	20456	593	359	71	18495	461	285	48
1903	20520	572	365	65	18548	472	293	66
1904......	20584	584	323	72	18601	450	312	63
1905......	20621	597	390	79	18629	469	316	60
1906......	20666	583	404	92	18659	480	303	68
1907......	20716	564	347	64	18704	451	303	49
1908......	20766	525	324	66	18749	456	309	52
1909......	20818	566	360	63	18795	417	285	53
Averages of Years 1900 to 1909	20615	574	362	76	18624	456	307	58
1910......	20869	566	324	76	18842	426	277	62

NOTES.—(*b*) Deaths of residents occurring in public institutions beyond the district are included in sub-columns (*c*) of this Table, and those of non-residents registered in public institutions in the district excluded.

(*c*) Deaths of residents occurring in public institutions, whether within or without the district, are allotted to the respective localities according to the addresses of the deceased.

CITY AND COUNTY OF THE CITY OF CHESTER.

TABLE III.—Cases of Infectious Disease notified during the Year 1910.

Notifiable Disease.	Cases Notified in Whole District.							Total Cases notified in each Locality.		No. of Cases Removed to Hospital from each Locality.		
	At all Ages.	At Ages—Years.										
		Under 1.	1 to 5.	5 o 15.	15 to 25.	25 to 65.	65 and upwards.	Castle District.	Cathedral District.	Castle District.	Cathedral District.	Total cases removed to Hospital.
Small-pox	...	...	...	...	...	...	...	...	...	...	H	...
Cholera	...	...	...	...	...	...	...	...	...	...	...	...
Diphtheria (including Membranous Croup)	62	...	14	35	6	7	...	29	33	22	27	49
Erysipelas	14	...	...	1	4	8	1	7	7	...	...	...
Scarlet Fever	186	3	48	112	16	7	...	102	84	77	57	134
Typhus Fever...	...	...	...	...	...	...	...	...	...	...	...	...
Enteric Fever	3	...	...	...	...	3	...	1	2	...	...	...
Relapsing Fever	...	...	...	...	...	...	...	...	...	...	...	...
Continued Fever	...	...	...	...	...	...	...	...	...	...	...	...
Puerperal Fever	5	...	...	...	2	3	...	2	3	...	...	...
Plague...	...	...	...	...	...	...	...	...	...	...	...	...
Ophthalmia Neonatorum ...	5	5	...	...	...	...	...	4	1	...	...	...
Zymotic Enteritis	54	26	28	...	...	...	...	30	24	...	...	...
Phthisis, Vol. Notification 9 „ Pub. Health (Tub.) Reg. 1908 ...23 —	32	...	...	...	8	24	...	21	11	...	...	...
Totals	361	34	90	148	36	52	1	196	165	99	84	183

CITY AND COUNTY OF THE CITY OF CHESTER.

Table IV.—Causes of, and ages at, Death during Year 1910.

CAUSES OF DEATH	DEATHS AT THE SUBJOINED AGES OF "RESIDENTS" WHETHER OCCURRING IN OR BEYOND THE DISTRICT.							DEATHS IN OR BELONGING TO LOCALITIES (AT ALL AGES).		TOTAL DEATHS WHETHER OF "RESIDENTS" OR "NON-RESIDENTS" IN PUBLIC INSTITUTIONS IN THE DISTRICT.
	All ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.	Castle District.	Cathedral District.	
Small-pox	...	...	...	...	...	...	...	...	...	...
Measles	26	1	23	2	...	...	...	12	14	...
Scarlet Fever	7	...	4	3	...	...	...	4	3	6
Whooping-cough	5	2	2	1	...	...	...	5	...	...
Diphtheria (including Membranous Croup)	3	...	2	1	...	...	...	...	3	1
Fever Typhus	...	...	...	...	...	...	...	...	...	...
Enteric	2	...	...	...	...	2	...	1	1	...
Other continued	...	...	...	...	...	...	...	...	...	...
Epidemic Influenza	5	...	...	...	1	1	3	4	1	...
Cholera	...	...	...	...	...	...	...	...	...	...
Plague	...	...	...	...	...	...	...	...	...	...
Diarrhœa (see notes at foot) ...	24	21	3	...	...	...	...	13	11	4
Enteritis (,, ,,) ...	1	...	...	...	...	1	...	1	...	1
Puerperal Fever ,,) ...	1	...	...	...	...	1	...	...	1	...
Erysipelas	...	...	...	...	...	...	...	...	...	...
Phthisis (Pulmonary Tuberculosis)	43	...	...	4	10	28	1	28	15	...
Other Tuberculous Diseases ...	26	10	9	4	2	...	1	13	13	7
Cancer—Malignant Disease (see notes at foot)	44	...	...	...	1	21	22	23	21	4

Bronchitis	38	10	1	1	...	9	17	17	21	1
Pneumonia	49	16	13	3	2	11	4	27	22	15
Pleurisy	2	...	...	...	...	1	1	2	...	...
Other Diseases of Respiratory Organs	...	...	...	...	...	...	...	...	...	...
Alcoholism Cirrhosis of Liver	7	...	...	...	...	5	2	7	...	...
Venereal Diseases	3	...	1	...	...	2	...	2	1	2
Premature Birth	21	21	...	...	...	...	...	10	11	...
Diseases and Accidents of Parturition...	2	...	...	...	...	2	...	1	1	1
Heart Diseases	58	...	...	2	2	35	19	27	31	12
Accidents	20	3	2	3	1	6	5	8	12	12
Suicides	5	...	...	...	1	4	...	4	1	1
Marasmus	31	29	2	...	...	...	...	23	8	4
Convulsions	15	12	3	...	...	...	...	8	7	...
Bright's Disease and Cerebral Hæmorrhage	56	...	1	...	...	31	24	26	30	4
Old Age	45	...	...	...	...	...	45	24	21	1
All other Causes	62	13	6	6	4	23	10	34	28	26
All Causes	601	138	72	30	24	183	154	324	277	102

NOTE.—Under the heading of "Diarrhœa" are included deaths registered as due to Epidemic Diarrhœa, Epidemic Enteritis, Infective Enteritis, Zymotic Enteritis, Summer Diarrhœa, Dysentery and Dysenteric Diarrhœa, Choleraic Diarrhœa, Cholera (other than Asiatic or Epidemic), and Cholera Nostras.

Deaths from Diarrhœa secondary to some other well-defined disease are included under the latter.

Deaths from Enteritis, Muco-Enteritis, Gastro-Enteritis, and Gastritis are placed immediately below, but separately from, those enumerated under the heading Diarrhœa as defined by enumeration above. This is particularly important for deaths under one year of age, as many of the deaths in infancy returned as due to Enteritis are really caused by Epidemic Diarrhœa.

Under the headings of "Cancer" and "Puerperal Fever" are included all registered deaths from causes comprised within these general terms.

CITY AND COUNTY OF THE CITY OF CHESTER.

Table V.—Infantile Mortality during the Year 1910.

CAUSE OF DEATH.		Under 1 Week.	1-2 Weeks.	2-3 Weeks.	3-4 Weeks.	Total under 1 Month.	1-2 Months.	2-3 Months.	3-4 Months.	4-5 Months.	5-6 Months.	6-7 Months.	7-8 Months.	8-9 Months.	9-10 Months.	10-11 Months.	11-12 Months.	Total Deaths under One Year.
All Causes	Certified	16	4	8	8	36	18	20	11	12	7	7	5	5	5	5	7	138
	Uncertified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common Infectious Diseases.	Small-pox	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Chicken-pox	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Measles	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
	Scarlet Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Diphtheria: Croup	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Whooping Cough	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	2
Diarrhœal Diseases	Diarrhœa, all forms	..	..	1	..	1	3	5	4	2	3	1	1	1	..	..	..	21
	Enteritis (*not Tuberculous*)..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Gastritis, Gastrointestinal Catarrh	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wasting Diseases.	Premature Birth	12	3	1	2	18	3	..	..	..	..	..	..	..	..	..	..	21
	Congenital Defects	2	..	1	1	4	1	2	..	..	..	..	..	..	..	..	..	7
	Injury at Birth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Want of Breast Milk ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Atrophy, Debility, Marasmus	..	1	2	3	6	6	8	1	4	..	..	..	2	..	..	2	29
Tuberculous Diseases.	Tuberculous Meningitis ..	..	..	..	..	..	..	..	1	1	..	..	1	..	1	1	1	6
	Tuberculous Peritonitis: Tabes Mesenterica	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	1	4
	Other Tuberculous Diseases	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Erysipelas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Syphilis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Rickets	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Meningitis (*not Tuberculous*)	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	2
	Convulsions	1	..	1	1	3	2	3	1	1	..	1	..	..	1	..	..	12
	Bronchitis	..	..	1	1	2	2	1	..	1	..	1	1	..	..	1	1	10
	Laryngitis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Pneumonia	..	..	..	..	..	1	..	..	2	..	4	2	2	2	2	1	16
	Suffocation, overlying ..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	2
	Other Causes	1	..	..	..	1	..	..	3	1	..	..	..	..	..	..	..	5
		16	4	8	8	36	18	20	11	12	7	7	5	5	5	5	7	138

Births in the year—Legitimate, 959; illegitimate, 33.
Deaths in the year of legitimate infants—132; of illegitimate infants—6.

Population: Estimated to middle of 1910—39711.
Deaths from all Causes at all Ages—601.

FACTORIES, WORKSHOPS, WORKPLACES, AND HOMEWORK.

1.—INSPECTION.

Including Inspections made by Sanitary Inspectors or Inspectors of Nuisances.

Premises.	Number of		
	Inspections.	Written Notices.	Prosecutions.
Factories ... ... (Including Factory Laundries).	15	0	0
Workshops ... ... (Including Workshop Laundries).	476	8	0
Workplaces ... ... (Other than Outworkers' Premises, included in Part 3 of this Report).	0	0	0
Total	491	8	0

2.—DEFECTS FOUND.

Particulars.	Number of Defects.			Number of Prosecutions.
	Found.	Remedied.	Referred to H.M. Inspector.	
Nuisances under the Public Health Acts:—				
Want of cleanliness	26	26	0	0
Want of ventilation	1	0	1	0
Overcrowding	0	0	0	0
Want of drainage of floors	0	0	0	0
Other Nuisances	17	17	0	0
Sanitary accommodation: insufficient	2	2	0	0
Sanitary accommodation: unsuitable or defective	6	6	0	0
Sanitary accommodation: not separate for sexes...	1	0	1	0
Offences under the Factory & Workshop Act	0	0	0	0
Total	53	51	2	0

3—OTHER MATTERS.

Class.	Number.
Matters notified to H.M. Inspector of Factories:—	
Failure to affix Abstract of the Factory and Workshop Act (s 133) ...	0
Action taken in matters referred by H.M. Inspector as remediable under the Public Health Acts, but not under the Factory and Workshop Act (s. 5): Notified by H.M. Inspector ..	21
Action taken in matters referred by H.M. Inspector as remediable under the Public Health Acts, but not under the Factory and Workshop Act (s. 5): Reports (of action taken) sent to H.M. Inspector	19
Other matters: Notice of Occupation	45
Underground Bakehouses (s. 101):—	
Certificates granted during the year	0
In use at the end of the year	4
Homework:—	
List of Outworkers (s. 107):—	
Lists received from Employers	40
Lists of Addresses of Outworkers received from other Councils...	2
Number of Inspections of Outworkers' Premises	69
Outwork in unwholesome premises (s. 108): Instances	3
Outwork in unwholesome premises (s. 108): Notices served ...	3
Workshops on the Register (s. 131) at the end of the year	239